because it works

Operation manual

WIWA Professional

Type:

- ❍ 24026
- ❍ 24053
- ❍ 24071
- ❍ 28023
- ❍ 28048
- ⊗ 28064
- ❍ 38032
- ❍ 38042
- ❍ 44024
- ❍ 44032

Serial-No.

… … … … … … … … …

CE

Ex

Translation of original operation manual WIWA Professional
Professional · DBK · en · 02.12 · jw

EC-Declaration of conformity

according to Appendix II, No. 1A of the Machinery Directive 2006/42/EC, modified by 2009/127/EC

The company
WIWA Wilhelm Wagner GmbH & Co. KG
Gewerbestr. 1-3
35633 Lahnau
Germany

herewith declares
that the equipment types
Professional 24026; 24053; 24071; 28023; 28048; 28064;
Professional 38032; 38042;
Professional 44024; 44032

with Serial-No. _____

are in conformance with the provisions of the above-mentioned directive.

Documentary authority: WIWA GmbH, Tel. +49 6441 609 0

Lahnau, 11.01.2012
Place, Date

Heidrun Wagner-Turczak
Managing Director

Declaration of Conformity

according to ATEX-Directive 94/9/EC

The company
WIWA Wilhelm Wagner GmbH & Co. KG
Gewerbestr. 1-3
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Professional 38032; 38042;
Professional 44024; 44032

with Serial-No. _____

are in conformance with the provisions of the above-mentioned directive.

The listed equipment is assigned to Group II, Category 2G.

Marking: Ex **II 2G cT4**

Lahnau, 11.01.2012
Place, Date

Heidrun Wagner-Turczak
Managing Director

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1.2 Preface

This User's Handbook must always be available to operating staff
The operating authority of the equipment must ensure, that a user`s handbook is available to the operator, in a language which he understands.

Dear customer!
Thank you for your decision to purchase WIWA® equipment.

In the user's handbook, you can find all information required for the proper handling of your WIWA® Airless Paint Spraying Machine. However, for safe operation, there are further essential details which you should adhere to:

Please read and observe the guidlines valid for your country.
In Germany, the "**Richtlinien für Flüssigkeitsstrahler**" (Guidelines for fluid sprayers) published by: Hauptverband der Gewerblichen Berufsgenossenschaften (Industrial Employer's Liability Insurance Association), are valid.

Manufacturer's notes and operating guidelines for coating and pumping materials should be observed at all times.

No method of operation should be exercised which impairs the safety of WIWA® products and the operating personnel.

We wish you much success and excellent working results when appliying your WIWA® Airless Paint Spraying Machine.
WIWA Wilhelm Wagner GmbH & Co. KG.

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It is prohibited to pass on this operating manual for reproduction, utilisation or communication of its contents, unless this has been explicitly permitted. Infringements incur an obligation to pay damage compensation. All rights reserved in the event of registration of the patented design, industrial design or registered design.

This operating manual only applies in conjunction with the machine card that was given to you with the user manual for your equipment. Please check that the type plate data is identical with the information on the machine card. Please notify us immediately if there are discrepancies, if the user manual has been incorrectly compiled or if the type plate is missing.

1.3 First read, then start

Remember that Airless Paint Spraying Equipment works under extreme pressure and that high levels of spraying pressure are created!
- ➤ Never hold your finger or hand in front of the gun and never reach into the spray.
- ➤ Never point the spray gun towards yourself, other people or other living creatures.
- ➤ Always pay close attention to the references and specifications found in the user's handbook!

Before each usage, be especially certain to:
- ➤ Check the grounding conditions (for the unit and the object to be sprayed).
- ➤ Check the seal of all connecting and mounted parts.
- ➤ Observe the maximal allowed pressure of the unit and accessory parts.

Beforebeginning any work on the equipment and at any pause during operation, be absolutely required to:
- ➤ Turn off the spraying equipment at the air pressure stop valve.
- ➤ Release the pressure found in the spraying gun and hose.
- ➤ Secure the spraying gun.

Pay attention to safety!
The accident prevention regulation "Handling of Coating Materials" (BGV B3) and the guidelines covering fluid sprayers ZH1/406 from the German Employer's Liability Insurance Association are to be observed without fail. To ensure a safe operating environment, the condition of fluid sprayers must be inspected by an expert every 12 months or sooner, if deemed necessary. A written record of the inspection results is to be kept.

Remaining paint and solvent are to be disposed of according to legal regulations. This also applies for environmently friendly water lacquer or enamel systems.

In case of injuries, consult a physician or go to the next hospital without delay. If paint/material or solvent has gone into the skin, the physician has to be informed about the type of paint/material or the solvent applied.Therefore, always ensure that the product specification sheet, with address and telephone number of the manufacturer, is at your disposal!

2.1 Description of symbols

The signs and symbols used in this User's Handbook have the following meaning:

NOTE
This marks a section of text which is especially relevant to safety. Special attention should be paid to this section and the contents strictly observed.

SMOKING PROHIBITED
This marks a situation in which a fire hazard arises through the use of flammable or explodable solid, fluid or gaseous materials.

WARNING
This marks a situation which could be dangerous. If not observed,death or very serious injuries could result.

DANGER OF EXPLOSION
This marks a situation, where there is danger of explosion. Observation of this information is absolutely essential.

ELECTRICAL VOLTAGE
This marks a situation, where there is a danger of explosion through an electostatic charge. Observation of this information is absolutely essential.

USE EAR PLUGS
For health reasons, it is very important to pay attention to this warning.

USE BREATHING PROTECTION
For health reasons, it is very important to pay attention to this warning.

HEALTH DANGER
This marks materials which are hazardous to your health.
Observation of this information is absolutely essential.

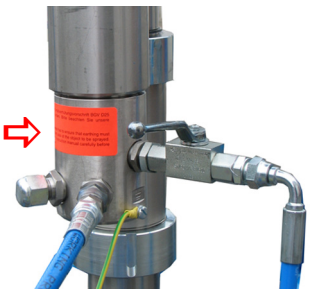
FIRST AID
In case of injuries or accidents, these instructions should be absolutely adhered to.

2.2 Warning instructions located on the machine

Warning signs and symbols which have been placed on the machine are there to inform of possible dangers and must be observed.

Warning signs and symbols may not be removed from the machine.
Damaged and illegible warning signs and symbols are to be replaced immediately.

The following signs are located on the machine:



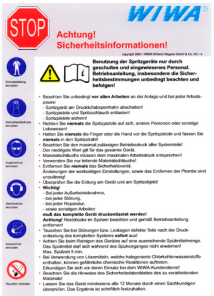
Picture 2.2.1

- On the high pressure filter: Warning sign covering the grounding of the machine (picture 2.2.1)

The propietor is required according to the German Accident Prevention Regulation (Unfallverhütungsvorschrift), BGR 500, Kap. 2.29, to ensure that the machine is properly grounded. Please, observe our instruction manual.

Picture 2.2.2

- On the material pump cylinder: Nameplate (picture 2.2.2)
Please observe that the information located on the nameplate corresponds to data found on the machine card. We request immediate notification should there be any discrepancies or if the nameplate is missing.



Picture 2.2.3

- Picture 2.2.2
Safety information
This sign lists the most important safety guidlines for operating this piece of equipment.
Please read this information carefully as well as adhering to all instructions located in this User's Handbook!

2.3 Dangers arising from the equipment

This machine was designed and built in accordance with all safety aspects. It corresponds with the present standards of technical regulations and current rules for accident prevention.

It left the factory in perfect condition and warrants a high level of safety. However, the following dangers exist if operated incorrectly or used inappropriately:

- to life and limb of operator or third persons
- for the machine and other property belonging to owner of machine
- for the efficient working of the machine

All personnel involved in the starting, operation and maintenance of the machine must read the following notes carefully and observe them. It is a matter of their safety! We recommend that the machine operation management have this confirmed in writing.

2.4 Application of the machine

The WIWA® Airless Paint Spraying Machines were especially designed for strong corrosion protection.

Modell: 24053, 24071, 28048, 28064
These airless paint spraying units are suitable for working with both low and high viscosity, high-built materials, regardless whether they are water or solvent based. Low solvent and solvent-free materials can be processed as well.
These machines are optimal for spraying applications using longer fluid hoses and larger tip-bores, as well as for spraying under high pressure conditions.

Model: 38032, 38042, 44024, 44032
These airless paint spraying machines were especially developed for the use of coarse-pigmented or abrasive materials having a low to middle level of viscosity, such as zinc primer, ferric oxide, zinc silicate on a solvent basis, glass flake, printing ink, flame protection and other heavily pigmented or fibrous materials.
These machines are known for their ability to handle a large volume of material flow, even when using large tip openings and low piston speeds and to keep unit wear at a minimum.
They are especially well suited when using automatic paint spraying systems either with or without circulation.

Using this equipment in areas requiring protection from explosions

Marking: Ⓔx **II 2G cT4**

This equipment fulfills the explosion-proof requirements found in the guideline 94/9/EC for the type of explosion, equipment catagory and temperature class found on the nameplate).
This equipment is able to be installed in areas requiring Zone I explosion protection. Due to the possibility that explosive gases and overspray may be created, this unit is to be considered as Group II, Equipment Catagory 2G.
The flash point for the materials being sprayed, as well as the solvent being used, must be **above** 200°C.
When operating this equipment, the User's Handbook must be followed closely.
The required inspection and maintenance intervals must be adhered to strictly.
All information found on the unit's signs or plates must be adhered to and not exceeded. Do not allow this unit to be overloaded. It is the responsibility of the operator of this equipment to determine the explosion risk (zone determination according to EC regulation 94/9/EC, Appendix II, Nr. 2.1-2.3) in the area of usage, in accordance with local regulatory authority guidelines. **Furthermore, it is the responsibility of the operator on-sight to check and ensure that the technical specifications and markings according to ATEX are compliant with local requirements.**
Please observe that some components have their own nameplate with separate markings according to ATEX.
The marking with the lowest rating for explosion protection becomes valid for the entire system. If the intended application could lead to injury of personnel if this equipment malfunctions, on-sight precautions and preventive measures must be implemented
If this equipment appears to be malfunctioning or behaving strangely during operation, the unit must be shut down immediately and WIWA® Customer Service contacted as soon as possible.

Picture 2.4.1

It must be ensured that the unit is grounded either separately or together with the equipment it is mounted to (maximum resistance $10^6\,\Omega$, picture 2.4.1 ground / potential equalization).

Spaying machines which are not protected against explosions may not be used in workplaces which fall under the regulation covering explosion protection. Pneumatically driven airless spraying machines are not affected by this. Should, however, additional electrically driven accessories be mounted to these machines, such as agitators or heaters, the regulation covering explosion prevention must be checked for compliance.
Plugs for heaters, agitators, etc. which are not protected against explosions may only be plugged into sockets located outside of areas that fall under the regulation covering explosion prevention, even if the accessory being used is explosion protected.

Other usage is not in line with regulations. Before WIWA® equipment is used for other purposes or with other materials, and, therefore, not according to the regulations, permission should be obtained from the manufacturer, as the guarantee is otherwise invalid. The observation of technical documentation and the compliance with specified operational, maintenance and starting guidelines are manditory in accordance with the valid regulations.

2.5 Machine surroundings

Rebuilds and changes
For safety reasons, it is not allowed to carry out rebuilds or changes without authorization.
Protective equipment may not be dismounted, changed or neglected.
If using components which are not produced or delivered by WIWA®, warranty coverage is negated as well as liability.
The machine may only be operated within the prescribed limits and machine parameters.

Danger caused by attachments and spare parts
If you use original attachments and original spare parts from WIWA®, the compatability with our equipment is guaranteed. It is, however, essential that the safety regulations of the attachments and spare parts are observed. You can find these safety regulations in the User's Handbook located with the spare parts lists.
If you use attachments and spare parts from another source, WIWA® cannot guarantee the safety of the entire system. In this case, our guarantee does not cover any damage or injury caused by such attachments and spare parts.

Emissions
It is possible for solvent vapours to occur, depending on the materials used. Therefore, please ensure the workplace is sufficiently ventilated in order to avoid damage to health and property. Always observe the processing information given by the material manufacturer.
The sound pressure level of the equipment is below 85 db(A).
Nevertheless, appropriate means of noise protection should be made available to the operating staff.
The operator is responsible for compliance with the rules covering the prevention of accidents due to „noise“ (BGV B3). Therefore, pay special attention to the environmental conditions at the site, e. g. noise can be increased if the machine is installed in or on hollow bodies.
Exact details regarding noise emission are mentioned in the Chapter "Technical specification".

2.6 Sources of danger

Remember that WIWA® Airless Paint Spraying Machine work under extreme pressure procedures and that they can cause life-endangering injuries if used inappropriately.

Warning!
Material exits the spray gun at very high pressure levels. The spray jet can cut or be injected under the skin or eyes, resulting in serious injuries.
- **Never** point the spray gun towards yourself, other people or other living creatures.
- **Never** hold your finger or hand in front of the spray gun and **never** reach into the spray jet.

Warning!
Unintentional triggering of the spray gun can lead to injury or damage to property.
- Always apply the spray gun safety catch, regardless how short the pause in spraying is.
- Before operation, always check the function of the spray gun safety catch.

Warning!
Components that do not correspond to the maximum pressure created by the pump are quickly prone to rupture, leading to serious injuries.
- Fluid hoses **must** be rated to correspond to the maximum operating pressure of the unit, with an appropriate safety factor allowance.
- No hoses may show signs of leaks, kinks, wear or blisters.
- All hose connections must be tight.

The maximum operating pressure stated by us must correspond to all WIWA® components and accessory items within the system (i.e. pumps, heaters, hoses, spray guns, safety valves).
If the pressure ratings differ, the lowest rated max. pressure becomes valid for the entire system.
Example:

Pump	max. 420 bar (6090 psi)
Fluid hose	max. 600 bar (8700 psi)
Spray gun	max. 500 bar (7250 psi)

The maximum allowable operation pressure for the entire system is 420 bar (6090 psi).

Warning!
If used outdoors, a lightning strike could lead to injury.
- Never operate the unit outdoors during a thunderstorm.

Warning!
It is possible for a static charge to occur due to the high flow speeds during the airless spraying procedure. Static

charges can lead to fire and explosions.
Always use an open container.

- **Never** spray solvents or materials containing solvents into narrow-necked cans or barrels with bung holes!
- Ensure that the spray gun has contact with the container walls when working with metal containers.

Danger of explosion!

Heated solvent can lead to an explosion within the pump. This could result in serious injuries, including loss of vision, and property damage. Always observe the flashpoint and ignition temperature for the solvent being used!
Turn off the fluid heater whenever the following work is performed on the pump:

- Flushing / Cleaning
- Pressure check
- Preparation for operation
- Shutting down

Dangerous chemical reactions can occur if closed or pressurized systems with aluminum or galvanized pump components come into contact with solvents such as 1.1.1 - trichlorethylene or methylene chloride that contain halogenated chlorofluorocarbons (CFC). If such solvents, or paints or lacqures that contain them, are to be used, we recommend contacting WIWA® Customer Service or the WIWA® factory directly for further information.
Please note that there are stainless-steel Airless pumps that are designed for use with such materials.

Danger!

If being operated in closed rooms, explosive atmospheres can be created. This could lead to serious injuries and property damage. Smoking, using open fires or other ignitable sources is prohibited in the entire area of operation!

2.7 Operating staff

Authorised Operators

People under the age of 16 should not operate this equipment.
The management in charge of the operation of the machine must make the User's Handbook available to the operator and must make sure that he has read and understood it. Only then may the system be put into operation. **We recommend the manager has this confirmed in writing.** The operator of the machine is obliged to report any changes in the machine which might affect its safety to the manager, as he must ensure that the machine is functional. The responsibilities for the different activities on the system must be laid down clearly and adhered to. No unclear competences may remain as these could endanger the safety of the users.
The operator must make sure that only authorised persons work on the machine. He is responsible to third parties in the working vicinity of the system.
The operator of the equipment is obliged to repeat instructions about dangers and safety measures at regular intervals (at least once a year, for young persons twice a year).

Personal protective equipment

- We call to your attention that the valid guidelines and requirements in accordance with work surroundings (mining, closed areas etc.) must be absolutely adhered to. The prescribed protective clothing must be worn at all times, as solvent vapours and solvent splashes cannot be completely avoided
- The sound pressure level of the equipment is below 85 db(A).
  Nevertheless, appropriate noise protection means should be made available to the operating staff.
- Although spraying fog is kept to a minimum when the correct pressure setting and proper method of operation are observed, the operating painter should wear a protective breathing mask.
- When working with heated materials, the outer surface of the pump can become hot.
  Protective gloves must be worn at all times.
- Never use solvent or other materials which present a health hazard for cleaning skin. Only suitable skin protective, skin cleansing and skin care materials may be used.

2.8 Installation site

- The system must have a fixed position and sufficient space to ensure safe operating. The passage to the safety fittings must not be blocked.
- Keep the working area, especially all gangways and standing areas, clean. Remove spilled paint or solvent immediately.
- Ensure there is sufficient ventilation at the workplace to prevent damage to health and property. Observe the manufacturer's processing instructions at all times.

- Despite the fact that no legal regulations exist covering the low-fog airless spraying method, dangerous solvent fumes and particles of paint should be removed of per vaccuum.
- The owner / operator of this equipment is required to ensure that proper protection against lightning strikes is available.
- Comply strictly with the current rules for accident prevention.

2.9 Behavior in case of emergency

Leaks

If leaks occur in hoses or hose connections, material is expelled under very high pressure. This can result in very serious injuries to hands, arms or eyes.

- Never try to seal leaks with hands or by bining
- Never patch fluid hoses.
- Should a leak occur, the whole system is to be shut down and depressurized immediately:
  - Close the air tap lock to cut off the inbound air supply.
  - Hold the drain hose into an appropriate container and ensure that it can not slip.
  - Open the drain valve.
  - Replace the defective parts immediately or contact WIWA® Customer Service.

Injuries

- Should an injury occur (i.e. spray jet cut or injection), we recommend a doctor be called immediately.
- Inform the doctor of the material sprayed (e.g. paint) and the solvent (thinner).Have the product data sheet at hand (adress and telephone number of supplier or manufacturer, name of material and material number).
- Memorize where aid can be found.
- Memorize the local emergency phone numbers.
- Become familier with the first-aid measures

Fires

- Read and and observe the instructions for fire alarm and escape routes put up in your factory.
- Do not use any other extinguishing agents than those which are prescribed by the coatings manufacturer.

2.10 Safety features

This equipment is delivered with the following safety features:

Picture 2.10.1

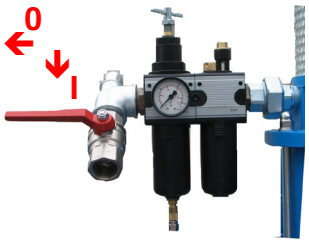
Safety valve
(Picture 2.10.1)
The safety valve prohibits the maximum allowable inbound air pressure from being exceeded.
If the inbound air pressure exceeds the maximum allowable value, the safety valve will blow off.

Warning!

The safety valve is factory mounted and sealed to the air motor. To ensure safe operation:

- **Never remove the safety valve.**
- **Never change the safety valve setting.**

New safety valves must correspond to the maximum allowable inbound air pressure and be sealed appropriately. The part number and maximum allowable inbound air pressure can be found in the machine card for the unit.



Picture 2.10.2

Air tap lock
(Picture 2.10.2)
The compressed air tap lock makes it possible to shut Air tap lock.
The compressed air tap lock makes it possible to shut down the unit immediately.

Picture 2.10.3

Ground cable connection
(Picture 2.10.3)
Due to the high flow speed created by Airless equipment, static charging can occur. A static charge can lead to fires or explosion.

The unit must, therefore, always be grounded properly. Factory-delivered WIWA® Airless spraying equipment comes standared with a ground cable. If lost or defective, it must be replaced (part no. 0474487)..

Picture 2.10.4

Spray gun safety catch
(Picture 2.10.4)
The spray gun safety catch is used to avoid unintentional triggering of the spray gun.
Apply the safety catch ("on") at any pause in spraying!

All safety devices must be checked:
- Before commissioning the system!
- Before beginning to work with the system!
- After any modifications have been made to the unit!
- After flushing or cleaning the system!
- After any repair or maintenance work on the system!

Checklist for checking the safety devices with the system depressurized
- Check to see whether the seal on the safety valve is damaged.
- Check the safety valve for signs of damage.
- Check the ground cable for damage.
- Check the connctions for the ground cable on the unit and the conductive object it is connected to.
- Check whether the air tap lock is functioning properly.
- Check the spray gun safety catch to ensure it functons properly.

If one of the safety devices is not functioning properly or if any other malfunction is found, the air supply to the unit must be cut off and the drain valve opened.
The unit may only be restarted once the problem has been solved and the system is functioning perfectly again.

2.11 Pump handling and auxiliary materials

Adjusting, servicing, cleaning, maintenance and repair of the unit
- Before starting any of the above:
  - Turn off the unit
  - Depressurize the system. Pay attention to residual pressure.

Activity	Personnel Qualification
Adjusting work	trained operator
Servicing work	trained operator
Cleaning work	trained operator
Maintenance work	personnel trained by WIWA® Customer service
Repair work	personnel trained by WIWA® Customer service

- After work is completed
  - Check the proper function of all safety features.
  - Check the proper function of the entire unit.

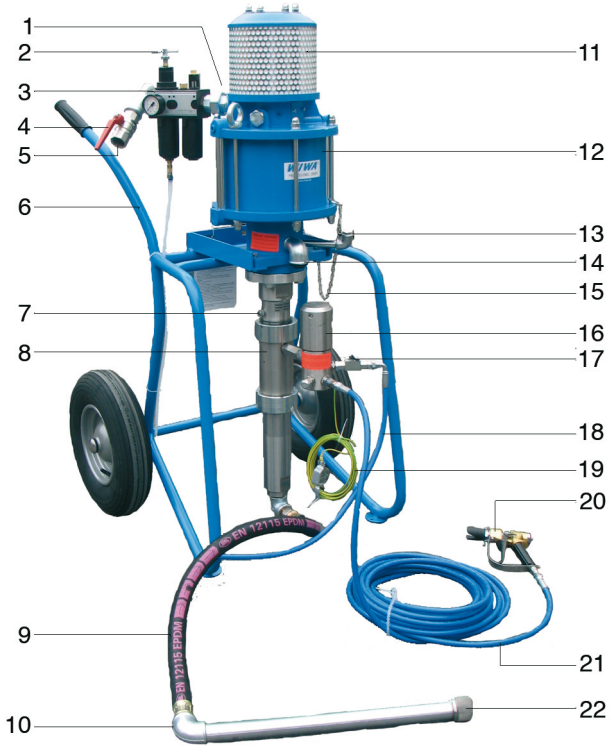
Handling of auxiliary materials
- When handling auxillary materials such as paint, solvent, oil, grease and other chemical substances, comply with the safety and dosing instructions of the manufacturer and the generally applicable regulations.
- Leftover solvents, oils, grease and other chemical substances must be collected according to the legal regulations for recycling and waste disposal.
- The local official laws for the protection of waste water must be observed.

2.12 Transporting

- Disconnect the unit from the main air supply and from any electrical outlets for accessory items, even if the unit is only to me moved a short distance.
- Empty the unit before transporting.
- Be careful when using a hoist to load this equipment!
- If using a hoist, ensure that the weight capacity is not exceeded and that proper lifting attachments are employed.
- Attach the hoist securely to the unit.
- Never stand under or near the unit when it is suspended. Serious injury could result!
- Only use appropriate hoisting equipment with sufficient load capacity.
- Secure the unit to the transporting vehicle in such a way that it can not slide or fall off.
- When lifting or loading the unit, do not transport any further items (i.e. paint cans or pails) along with it.
- Any components or accessories that had to be removed for transport must be remounted by skilled and trained personnel before beginning operation

Picture 2.12.1

Two ring screws are located on the machine's air motor (picture 2.12.1) to ensure safe lifting with hoisting devices.



Positions

1	savety valve	12	air motor
2	t-handle screw	13	Release agent - filler neck
3	maintenance unit	14	vent hole
4	air tap	15	spanner with chain
5	air inlet	16	high pressure filter
6	cart	17	high pressure valve
7	Release agent - drain screw	18	dump hose
8	material pump	19	Ground cable
9	suction pipe	20	spray gun
10	suction hose	21	material hose
11	air muffler	22	fluid seive

Job
The unit is to be installed at the job site and prepared for operation.

Prerequisite
- ➤ The material to be worked with is prepared.
- ➤ All materials to be sprayed should be marked with information on viscosity, processing temperatures, mixing proportions etc. If this is not the case, please acquire this data from the relevant manufacturer.
- ➤ The material to be sprayed must be slowly but thoroughly stirred before beginning to work.

i WIWA® offers a broad selection of accessories for the optimised preparation of spraying materials, i.e.:
- ➤ agitators in various sizes
- ➤ material pre-heating containers in various sizes
- ➤ fluid hester

If working with plural component materials, the pot life must be observed.

- ➤ To insure that the necessary volume of air is supplied, the compressor capacity must comply with the air consumption requirements of the pump.
  The diameter of the air supply hoses must correspond to the connection on the pump.

Procedure

1. Set up the pump

i High pressure spraying machines and systems can be integrated into spraying chambers either inside or outside of production facilities. To avoid possible soiling, an outside installation is preferable. Dimensions and weights of the equipment are indicated in Chapter "Technical specification".

- ➤ The pump must be set up securely on a level and solid surface
- ➤ Pay attention to the information covering the required floor space found in machin card.
  - ➤ Operating elements must be easily accessible
  - ➤ Safety features must be easily accessible

Wall-mounted versions:
- ➤ To fix the wall-mount, use M 12 screws - class 8.8
- ➤ Be sure to use anchoring devices in accordance with the nature of the wall being used.
- ➤ Ensure that at least 10 cm (4 in.) free space is left between the suction elbow and the floor after mounting.

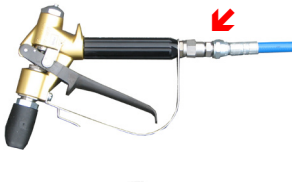
2. Mount accessories

Different components of the machine were dismounted and packed in a separate carton for shipping:
1. material hose (picture 4.1.1)
2. airless spraying gun (picture 4.1.2)
3. maintenance unit,(picture 4.1.3) as wellas

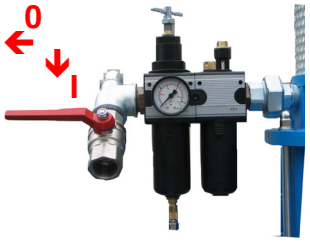
If the machine is delivered on a trolley, the maintenance unit and compressed air regulator remain mounted..

- ➤ Add these components as pictured (pictures 4.1.1 to 4.1.3).

Picture 4.1.1



Picture 4.1.2



Picture 4.1.3

Warning!
Material leaks at connections can lead to serious injury of property damage.
Check all turnable parts, nuts, screws and hose connections and tighten them securely.

- ➤ Check the permissible maximum air pressure for the spray hose, spray gun and accessories. It must be greater than or equal to the maximum operational pressure shown on the pump's nameplate or on the machine card.
- ➤ Compare the maximum operating pressure of the safety valve with the information on the machine card or the type plate. This information must correspond.

3. Ground the unit

Warning!

Due to the high flow speed created by Airless equipment, static charging can occur. A static charge can lead to fires or explosion
A static charge can lead to fires or explosion.

- **The pump and object to be coated must be grounded properly**
- **Only use conductive hoses**
  Note: WIWA® spray hoses are conductive and compatible with WIWA® pumps.

4. Open the anti-vacuum hole

- When being used for the first time, the sticker with the text „remove before use“ and the sealing plug is to be removed from the ventilation hole (overflow). The ventilation hole is located in the elbow with the openeing facing downward (picture 4.2.1).

Picture 4.1.4

5. Check the release agent level

- Check the level of release agent - refer to Chapter 8.2 "Maintenance plan".
  The unit is filled with release agent prior to delivery.

6. Maintenance unit prepare

- Fill the maintenance unit with pneumatic oil or anti-freeze and take the setting as described in chapter 8.4 "Maintenance on the maintenance unit.

Result

The machine is now ready for operation. Continue with the first cleaning (chapter 5.1).

5.1 First cleaning

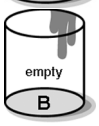
Job

This machine was factory tested after assembly for perfect functioning with a test-medium. The entire system should be flushed with wash thinner before spray operation begins so that the material to be sprayed is not affected by the test-medium.

Prerequisite

➤ Required:

1 open container with cleaning material (at least 5 liters / 1.3 gal. of wash thinner or solvent), called container **"A"** below.



1 empty, open container for the mixture of cleaning material and test-medium, called container **"B"** below.

➤ Please, check whether the material hoses comply with the maximum working pressure and the prescribed safety factor. They should not have any leaks, kinks, signs of wear or bulges. The hose fittings must be securely attached and also comply with maximum pressure.

➤ When using a fluid heater, please, be sure to observe that it is cold during the cleaning process.

Please wear protective clothing at all times, as solvent vapours and splashes of solvent cannot be avoided completely.

Procedure

1. Prepare the spray gun for operation

➤ Close and apply the safety catch.

➤ Remove the tip from the spray gun.
Observe and follow the instructions found in the spray gun's User's Handbook.

➤ Attach the material hose to the secured airless spray gun.

➤ Connect the material hose with attached gun (without the nozzle) to the outlet of the high pressure filter.

2. Prepare the solvent container

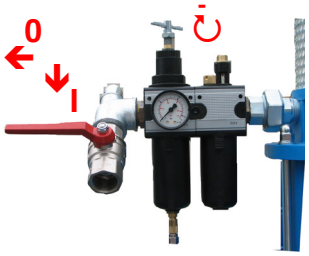
➤ Place the suction pipe with strainer into the "**A**" container.

3. Connect the compressed air line (Picture 5.1.1)

➤ Close the air tap lock.

➤ Turn the control knob on the air pressure regulator counter-clockwise until it turns freely.

➤ Connect the air supply line to the inbound air connection.



Picture 5.1.1

4. Remove the filter insert

➤ Remove the filter insert from the high pressure filter in accordance with chapter 8.3.

➤ Hold the drain hose (Picture 5.1.2, Pos. 2) into container "**B**" and secure it against slipping.

➤ Open the relief tap on the high pressure filter (Picture 5.1.2, Pos. 1).

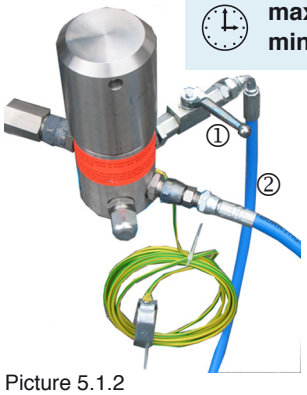
➤ Open the main air supply tap. (Picture 5.1.1).
Adjust the air regulator to a maximum of 2 bar (30 psi) by slowly turning the regulating screw to the right.

➤ Allow the Wash Thinner, soiled with the test-medium, to run out of the relief hose into the open container **„B“** for at least 10 seconds.

➤ Close the relief tap (Picture 5.1.2, Pos. 1).

Recommended cleaning time:

max. 2 bar (30 psi)
mind. 10 seconds



Picture 5.1.2

5. Clean the spray gun

➤ Hold the spray gun into container "**B**".

➤ Spray for a minimum of 10 seconds against the inner wall of the container.
Ensure that the spray gun has contact with the container walls when working with metal containers.

We recommend a cleaning period of approx. one minute for a good cleaning result. In order to avoid the danger of explosion caused by the heating of cleaning material, it should not be pumped for longer periods (a maximum of 5 minutes) of time.

5. Open the de-icing system on air motor

➤ Activate the de-icing system by slowly turning the control screw to the right (available option).

➤ We recommend: minimum 1 complete turn
maximum 3 complete turns

Adjust the de-icing system according to your individual requirements, as factors such as pressure, number of cycles per minute, humidity and ambient temperature can affect the amount of air that is required to avoid ice build-up.

Result

The machine is now completely cleansed. Continue with the pressure check (found in chapter 5.2)

5.2 Checking pressure

Job

You want to inspect the seal all system components.

If using a fluid heater, the heater may <u>not</u> be turned on at any time while making the pressure test. The entire machine must be cooled completeley.
DANGER OF EXPLOSION! Observe the flash point for the solvent being used!

Procedure

1. Close the spray gun

➤ Close the spray gun and apply the safety catch.

2. Set the maximum pressure

➤ Set the maximum allowable pressure by turning the air pressure regulator control knob clockwise (Picture 5.1.1).

Observe the maximum allowable operating pressure for all system components.
If the ratings vary, the lowest pressure rating becomes the maximum allowable pressure for the entire system (refer to the examble in Chapter 2.6).

3. Check the safety valve

➤ Briefly raise the pressure approximately 10% above the maximum allowable inbound air pressure.
The safety valve must blow off

4. Check the seal of the system components

➤ Check the seal of the following components:
- ➤ Spray hose
- ➤ Spray gun
- ➤ High-pressure filter
- ➤ Connections

5. Pump out the remaining solvent in the system

➤ Turn the air pressure regulator control knob counterclockwise until the pump only runs very slowly.

➤ Remove the suction pipe from the container "**A**".

➤ Hold the spray gun into container "**B**".

➤ Disengage the safety catch and open the spray gun.

➤ Pump any remaining solvent out of the system.

➤ Turn the air pressure regulator control knob counterclockwise until it turns freely.

➤ Close the air tap lock.

➤ Close the spray gun and apply the safety catch.

➤ Hold the drain hose into container "**B**" and secure it against slipping.

➤ Depressurize the pump by briefly opening the drain valve / drain screw on the high-pressure filter.

Result

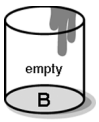
The unit is now ready for operation..

6.1 Equipment preparation

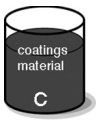
Job
Prepare the unit for operation.

Prerequisite
➤ Required:

1open container with cleaning material (solvent belonging to the coating material and recommended by the material manufacturer), called container **"A"** below



1 empty, open container for the soiled cleaning material/material mixture, abbreviated as container **"B"** below.



1 material container, called container **"C"** below.

➤ Inspect the seal of all system components and tighten the connections, if necessary.

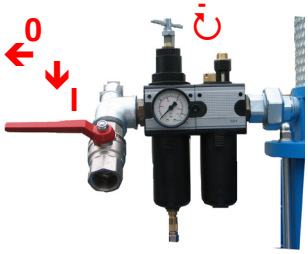
Please wear protective clothing at all times, as solvent vapours and splashes of solvent cannot be avoided completely.

Do not use narrow-necked cans or barrels with bung holes

Procedure

1. Connect the inbound compressed air line (Picture 6.1.1)

➤ Close the air tap lock.
➤ Turn the air pressure regulator control knob counterclockwise until it turns freely.
➤ Connect the inbound air line to the fitting on the air motor.



Picture 6.1.1

2. Pressure check

➤ Complete the pressure check described in Chapter 5.2.

3. Place a filter element into the high-pressure filter

➤ Depressurize the system.
➤ Place a filter element according to Chapter 8.3 into the high-pressure filter.

4. Feed preparation / Bleeding air from the unit

➤ Place the suction pipe into container "**C**".
➤ Hold the drain hose into container **"B"** and secure it against slipping.
➤ Open the drain valve on the high-pressure filter.
➤ Open the air tap lock.
➤ Turn the air pressure regulator control knob clockwise until the pump slowly cycles.
➤ As soon as coatings material comes out of the drain hose, close the drain valve / drain screw tightly.
➤ Disengage the safety catch and trigger the spray gun.
➤ Spray the remaining solvent in the unit into container **"B"** until only coatings material exits the gun.
➤ Close the gun and apply the safety catch.
➤ Clean the gun outlet with solvent and a brush.
➤ Mount a spraying tip or a reversible guard with the appropriate tip.

Observe and follow the instructions found in the User's Handbook for the spray gun being used.

RISK OF EXPLOSION!
When using a fluid heater, the following steps must be stricktly adhered to:

- **➤ Before allowing the fluid heaters to heat, the materials to be sprayed must be circulated in a cold condition as there may be solvent residue in the fluid heaters or somewhere else in the systems.**
- **➤ Be certain to ensure that the fluid heaters are turned off during preparation.**
- **➤ Always observe the flash point of the solvent being used as stated in the manufacturer's data sheet!**

➤ Set the required operating pressure by adjusting the air pressure regulator control knob accordingly.

Result
The unit is now ready for coatings operation.
Begin spraying according to Chapter 6.2.

6.2 Spray operaton

➤ Disengage the safety catch and begin spraying.

Explosion Danger
If the feed of material is interrupted during operation, the unit can run dry.
The resulting friction can lead to an explosion that results in injuries and/or property damage. Therefore:

- ➤ **Do not allow the pump to cycle if the feed container is empty.**
- ➤ **Do not allow the suction assembly to become plugged, kinked or otherwise defect.**
- ➤ **If no coatings material exits the gun, shut the unit down immediately.**

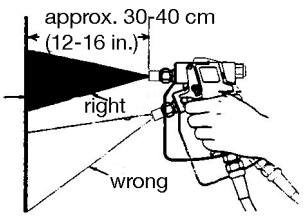
Set the operating pressure

➤ The optimal operating pressure is reached when coating applies evenly with graduated edges.
Only use as much pressure as is necessary to achieve a good spray pattern at a distance of approx. 30-40 cm (12-16 in.) to the object being coated.

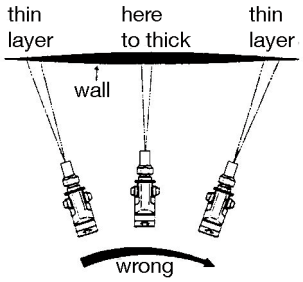
If the pressure is too high, excessive material consumption and spray fog will result.
If the pressure is too low, fingering and uneven coating thicknesses will result.

Coating / Finishing tips

➤ Hold the spray gun at a 90° angle to the surface being coated. If held at a different angle, the coverage will be uneven and spotted (Picture 6.2.1).
➤ The sprayer's arm must move evenly back and forth.
➤ An even speed must be maintained.
➤ Move the spray gun parallel to the surface being coated.
➤ Move the spray gun with the arm and not with the wrist. Waving the spray gun will lead to uneven coating results (Picture 6.2.2).
➤ Begin moving the spray gun before the trigger is pulled. This ensures even, smooth overlapping results and avoids higher coating builds when the trigger is first pulled.
➤ Release the trigger before ceasing arm movement.

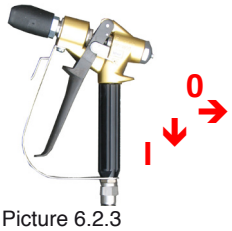


Picture 6.2.1



Picture6.2.2

Pauses in work



Picture 6.2.3

➤ Apply the spray gun safety catch at any pause in work. (Picture 6.2.3) Immerse the tip in a container of appropriate solvent.
➤ This will avoid residue coatings material from hardening and blocking the tip opening.

Exchanging the spray tip

➤ Exchange the spray tip before it is worn.
Worn tips result in increased paint consumption and reduced spray coating quailty.

6.3 Change of material

1. Shut down the unit

➤ Complete all steps for shutting down the pump found in Chapter 7.

2. Clean or replace the filter insert

➤ Clean the filter insert or replace it if it is damaged.
➤ Place the cleaned or replacement filter insert into the high-pressure filter according to Chapter 8.3.

3. Clean the suction strainer

➤ Clean the suction strainer using the solvent recommended by the manufacturer of the coating, or replace it if necessary.

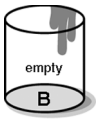
4. Operation

➤ Complete all the steps found in Chapters 6.1 + 6.2 Operation.

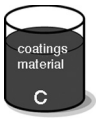
Job
The unit is to be cleaned and taken out of service after work is completed.

Prerequisite
➤ Required:

1 open container with at least 5 liters (1.3 gal.) of cleaning material (the solvent must correspond to the coating material and be recommended by the material manufacturer), called container **"A"** below.



1 empty, open container for the solvent/coating material mixture, called container **"B"** below.



1 material container, called container **"C"** below

Please wear protective clothing at all times, as solvent vapours and splashes of solvent cannot be avoided completely.

Do not use narrow-necked cans or barrels with bung holes

Procedure

1. Turn off and depressurize the unit
➤ Close the air tap lock.
➤ Turn the air regulator control knob counterclockwise as far as possible. The pressure gauge must read 0 bar (psi).
➤ Close the spray gun and apply the safety catch.
➤ Hold the drain hose into container "**B**" and secure it against slipping.
➤ Briefly open the drain valve on the high-pressure filter to depressurize.

2. Tip dismount and clean
➤ Dismount the standard tip and clean it thoroughly.

We recommend storing the tip (standard or reversible) in the solvent recommended by the coatings manufacturer. This will avoid residual paint from drying and clogging the tip**.**

3. Clean the high-pressure pump
➤ Remove the suction pipe from container "**C**".
➤ Wipe residual paint on the suction pipe and strainer into the container.
➤ Place the suction pipe with strainer into container "**A**".
➤ Open the air tap lock.
➤ Slowly turn the air regulator control knob clockwise until 1-2 bar (15-30 psi) operating pressure is reached.
➤ Hold the drain hose into container "**B**" and secure it agianst slipping.
➤ Open the drain valve on the high-pressure filter until clean solvent exits the hose.

➤ Close the valve tightly
Hold the spray gun against the inner wall of container "**B**".
➤ Trigger the gun until clean solvent is emitted. Be sure to maintain contact with the inner wall of the container.
➤ Close the spray gun and apply the safety catch.
➤ Lift the unit out of container "**A**".
➤ Again, hold the drain hose into container "**B**" and secure it agianst slipping.
➤ Open the drain valve on the high-pressure filter until the pump runs dry.
➤ Turn the control knob counterclockwise until it turns freely. The pressure must read 0 bar/psi on the pressure gauge.

To avoid unnecessary loss of material still in the hose, we recommend spraying the coating back into container "**C**" until solvent emerges from the gun.
If working with plural component materials, the pot life must be observed. All system components that come into contact with the mixed material must be cleaned with the appropriate solvent within the pot life given by the coatings manufactuerer.
Observe:
➤ Warm temperatures reduce the pot life.
➤ Allow the solvent to circulate for a while.
➤ No paint residue may remain in the pump or high-pressure filter.

4. Removing the filter insert
➤ Remove the element from the high-pressure filter according to the instructions found in Chapter 7.3.
➤ Wipe the inside of the high-pressure filter completely clean.
➤ Close the high-pressure filter with only the nut mounted inside (without the filter element!).

If taken out of service for a long period
➤ Clean the unit as described.
➤ Do not, however, completely empty the pump of solvent.
➤ As soon as clean solvent exits the spray gun and high-pressure filter, reduce the pressure to 0 bar/psi.
➤ Hold the spray gun against the inner wall of container "**B**" and tigger briefly.
➤ To depressurize the high-pressure filter:
  ➤ Hold the drain hose securely into container "**B**"
  ➤ Briefly open the drain valve
➤ The solvent that is left in the material pump is to remain until the next time the pump is used.
➤ When restarting the pump, be sure to flush the system thoroughly.

8.1 Regular inspections

According to the rules for the prevention of accidents „Working with liquid jet systems“ BGR 500, Kap. 2.36 the equipment must be checked and overhauled at regular intervals by a specialist (WIWA® Service).

The equipment must be checked:

- before the first start-up,
- after changes and repairs of equipment parts having an effect on safety,
- after an interruption of operation of more than 6 months,
- however at least every 12 months.

For equipment, which has been taken out of operation, the check can be postponed up to the next start-up.
The results of the checks must be recorded in writing and kept until the next check. The checking certificate or a copy of it must be available at the place where the equipment is used.

8.2 Maintenance plan

Warning!
Dismantling the pump under pressure can lead to serious body and/or eye injury.

- **Before perfoming any maintenance or repairs, the pump must be turned off.**
- **Depressurize the entire system.**
- **Disassemble the high-pressure filter, fluid hoses and spray gun very carefully.**
- **Cover the hose connections with a rag before dismantling to avoid paint splashes.**

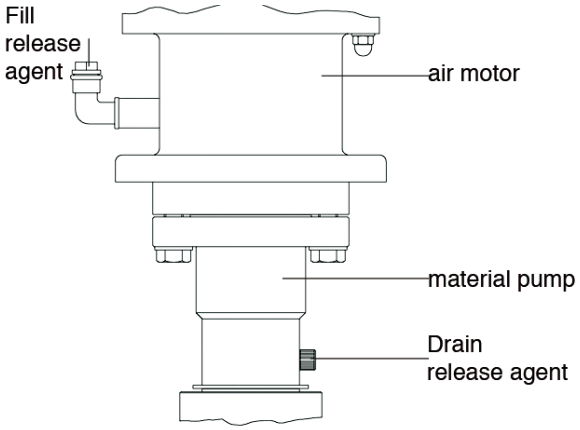
Check the release agent amount

- Before every start-up check the amount of release agent in the release agent chamber.(Picture 8.2.1) If necessary, fill release agent into the filling tube until the release agent is visible approx. 1 cm (0.4 in.) below the opening. The chamber holds approx. 50 ml (1.7 fl.oz.) of release agent.
- Check regularly the release agent for discoloration caused by contact with the spray material
  The discoloration can be monitored by draining a small amount ofrelease agent. After checking, add a corresponding amount of clean release agent to the chamber.

Heavy discoloration and material contermination:

These steps may only be perfomed by personnel trained by WIWA® or WIWA® Customer Service.

- Replace the material pump packing sets (refer to the spare parts list for the material pump)
- Clean the release agent chamber.
- Fill the chamber with clean release agent.



Picture 8.2.1

High-pressure filter maintenance

Clean the filter insert before every change of spray material or daily, at the latest.
Observe and follow the instructions found in Chapter 6.3 "Change of material".

8.3 High pressure filter

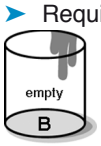
Job

- Clean or replace the filter insert:

1. after shutting down the unit (daily).
2. before every change of spray material.
3. if the pump does not cycle although the spray gun is triggered (without tip) or the drain valve / drain screw for the high-pressure filter is opened.

Prerequisite

- Required are:



An empty, open container for the mixture of solvent / spray material, hereafter called container "**B**".

1 open-end wrench Size 13

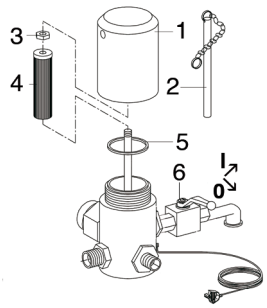
Warning!
If blockages occur, residual pressure may still be in the system even after depressurizing. Residual pressure can lead to serious injuries to the body or eyes.

- Before starting any work on the high-pressure filter, the pump must be turned off.

- Briefly trigger the spray gun.
- To drain pressure, open the drain valve / screw on the high-pressure filter.
- Disassemble the high-pressure filter very carefully!
- Replace worn parts with new ones..

Procedure

- Hold the drain hose into container **"B"**.
- Close the air tap lock for the pump.
- To depressurize, open the drain valve (Picture 8.3.1, pos. 6).



Picture 8.3.1

Removing the filter insert

- Unscrew the cap (Picture 8.3.1, pos. 1) with the spanner (Picture 8.3.1, pos. 2).
- Unscrew the nut (Picture 8.3.1, pos. 3) with a fork wrench and remove the filter insert (Picture 8.3.1, pos. 4)).
- Clean the filter insert.
  Use only the appropriate solvent for the material being worked with.
  Replace the filter insert should any sign of damage be present..
- Replace the o-ring (Picture 8.3.1, pos. 5) should any sign of leakage be present

Mounting the filter insert

- Mount the high pressure filter in reserve order.

Instructions

Before restarting the pump ensure that the unit is properly grounded.

R (corrosion resistant) + RS (stainless) versions: Lightly grease all threads to ease assembly / disassembly.

Filter insert selection

The insert must:

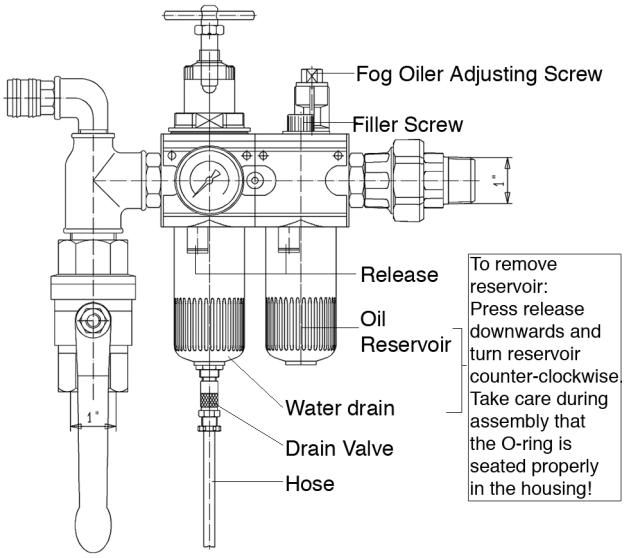
- correspond to the material being sprayed
- be compatible with the spray tip used
  The mesh should always be a little finer that the bore of the tip being used:

Filter insert	Tip size (mm/") from	to
M 200 (white)	-	0,23/.009
M 150 (red)	0,23/.009	0,33/.013
M 100 (black)	0,33/.013	0,38/.015
M 70 (yellow)	0,38/.015	0,66/.026
M 50 (orange)	0,66/.026	-

If working with heavily pigmented or fiber-filled materials:

- do not use a filter insert.
- the standard suction sieve may need to be replaced with a sieve having a larger mesh size.
- use a WIWA® reversible tip

8.4 Maintenance unit


Fog Oiler Adjusting Screw
Filler Screw
Release
Oil Reservoir
Water drain
Drain Valve
Hose
To remove reservoir: Press release downwards and turn reservoir counter-clockwise. Take care during assembly that the O-ring is seated properly in the housing!

Picture 8.4.1

Lubricant and/or anti-freezing agent

- Check the air motor's lubricant in the bowl of the air maintenance unit and refill, if required.
- High air humidity can cause icing of the motor.
- In case of icing, only use pure anti-freezing agent.

Adjustment of the fog oiler on the air maintenance unit

- ➤ Let the air motor run slowly at an air inlet pressure of approx.4 bar.
- ➤ Check the sight glass on the fog oiler to ensure that one drop of lubricant is fed into the compressed air at every 10 - 15 double strokes of the air motor. If this not the case, the adjusting screw on the fog oiler has to be set accordingly.
- ➤ Check the oil level in the reservoir daily.

The air maintenance unit may not be operated without oil. The maximum oil level is marked with a line around the reservoir.

- ➤ To fill the reservoir, remove the filler screw or remove the reservoir and fill directly.

- ➤ Only use the lubricants and anti-freezing agent as indicated in Chapter "Appendix/ Auxiliary materials".

Condensed water drain

- ➤ The collected condensation will be automatically drained by the drain valve. Place the hose into an empty catch basin.
- ➤ Check the reservoirs regularly for contamination and clean as necessary.

Notes to the oil reservoir/water cutoff

- ➤ To remove reservoir:
  - ➤ Press release downwards.
  - ➤ Turn reservoir counter-clockwise.

- ➤ Montage:
  - ➤ Take care during assembly that the O-ring is seated properly in the housing!

Fault	Possible Cause	Solution
The pump does not cycle whether the spray gun is triggered (without tip) or the drain valve / screw is opened.	➤ Air tap lock is closed.	➤ Open the air tap lock.
	➤ High-pressure filter is clogged.	➤ Clean or replace the filter insert.
	➤ Air motor is defect.	➤ Repair the air motor according to the spare parts list - Contact Customer Service if necessary.
Pump cycles, but no material reaches the tip. .	➤ Suction sieve is clogged.	➤ Clean the sieve.
	➤ Suction hose is blocked.	➤ Replace the hose.
	➤ Bottom valve ball does not rise (stuck).	➤ Trigger the spray gun without tip. ➤ Open the high-pressure filter drain valve/screw ➤ Lightly hit the bottom valve from the side (hammer). ➤ Remove the suction assembly and press on the ball from below using a peg or screwdriver until loose.
	➤ Bottom valve does not close.	➤ Remove the bottom valve and clean the ball and seat thoroughly.
Pump cycles but does not stop with the spray gun is closed.	➤ Packing and/or valve worn.	➤ Replace.
Pump cycles evenly but the required operating pressure can not be reached	➤ Air supply / pressure is too low.	➤ Increase the inbound air pressure with the regulator and check the diameter of the inbound air hose.
	➤ Tip (new) is too big.	➤ Use a smaller tip or larger pump.
	➤ Tip is worn (too big).	➤ Replace.
	➤ Air motor is frozen (runs too slow).	➤ If possible, reduce the inbound air ➤ pressure. ➤ If not already in use, mount an air maintenance unit with oiler. Fill the oiler with anti-freeze (Glysantine) and set it according to the instructions in the User's Handbook: Average setting: 1 drop every 10 cycles
Pump cycles unevenly (different stroke speeds on the upward and downward strokes) and the required spray pressure can not be reached..	➤ The viscosity of the coating is too high (suction loss).	➤ Thin the coating. ➤ Use a larger pump.
	➤ Suction assembly leakage (spray jet fluctuates).	➤ Check the seal of all suction assembly connections and replace if necessary.
	➤ Bottom valve leaks (pump only stops on the upwards stroke when the spray gun is closed).	➤ Remove the bottom valve and clean the ball and seat thoroughly.
	➤ Piston valve leaks (pump only stops on the downwards stroke when the spray gun is closed).	➤ Clean the ball and seat in the dual piston and replace if necessary.
	➤ Upper or lower packings leak (wear).	➤ Replace.
Coatings material spills out of the air motor anti-vaccum hole.	➤ Packings are worn.	➤ Replace. Note: Do not close or block the anti-vaccum hole!

Appendix 10

10.1 Technical specifications

Model	24026	24053	24071	28023	28048	28064	38032	38042	44024	44032
Air motor piston diamater (mm)	140	200	230	140	200	230	200	230	200	230
Air motor piston stroke (mm)	120	120	120	120	120	120	120	120	120	120
Pump ratio	26:1	53 : 1	71 : 1	23:1	48 : 1	64 : 1	32 : 1	42 : 1	24 : 1	32 : 1
Max. free-flow output (ltr/min)	24	24	24	28	28	28	38	38	44	44
Output per cycle (cm^3)	138	138	138	153	153	153	235	235	306	306
Max. input air pressure (bar)	8	8	6,5	8	8	7	8	8	8	8
Max. operating pressure ((bar)	208	420	460	184	380	450	255	335	190	255
Max. tip size (high pressure filter) (inch)	1/4 NPSM (A) 2 x 3/8									
Air inlet (maintenance unit) (inch)	1									
Dimensions LxWxH										
cart mounted (cm)	65 x 70 x 130									
wall mounted (cm)	60 x 45 x 130									
Net weight (cart mounted) (kg)		85	86		85	86	90	91	91	92
Sound pressure level emitted at the work place										
Running at idle (L_{pAd}) (dB)		84								
Running with load (L_{pAd}) (dB)		80								

10.2 Auxiliary materials

Release agent	Order No. 0163333
Pneumatik-oil (0,5 liter)	Order No. 0632579
Anti freeze	Order No. 0631387
Thread sealant (50 ml / 1.7 fl.oz.)*	Order No. 000015
Grease (acid-free)*	Order No. 000025

* Softener for filling the release agent chamber of the fluid pump.
** for maintenance unit
*** Required for maintenance and/or repairs

10.3 Machine card

This User's Handbook is valid only in connection with the following machine card:

The machine card includes all machine specifications and details which are important and relevant for safety:

- exact designation and manufacturing data
- technical specification and limit values
- equipment and inspection certificate
- details and order numbers for spare parts
- machine features (machine components and accessories supplied with spare parts number)

Please pay attention that the machine card specifications are in accordance with the nameplate. In case of any deviations or if the nameplate is missing, we would ask you to advise us without delay.

10.4 Certificate of training and operation

This certificate corresponds to the EU guideline for working substances 85/655/EWG, Paragraph II, Article 7.
The owner of the following machine has trained the operating personnel.

.....
(Make, Model, Year of Construction, Order Number)

The training was conducted by the following designated person:

.....
(Foreman or responsible Superior, Name, Department

The persons trained have read and understood the user's handbook for the above mentioned machine, especially the chapter Safety, and are certain that they can operate this machine safely.

.....
(Operating Personnel, Date, Name)

.....
(Personnel for Maintenance and Repair, Date, Name)

.....
(Personnel Electric/ Electronics, Date, Name)

MACHINE CARD FOR WIWA PROFESSIONAL SERIES

Manufacturer:	WIWA Wilhelm Wagner GmbH & Co. KG 35633 Lahnau 1
Distributor:	WIWA Wilhelm Wagner LP 107 N. Main St. Alger, OH 45812 Telephone: 866-661-2139
Description:	WIWA 64:1 Professional
Serial Number:	
Part No.	**7000200**
Production Year:	
Customer:	
Delivery Date:	

==========

Working Pressure (max., in psi)	6496
Pressure Ratio:	64:1
Air Inlet Pressure (max., in psi)	101.5
Output per cycle (fl.oz.):	5.1

==========

Machine Specifications:

Part No.	Description	Spare Parts Reference Number
0638843	High Pressure Pump consisting of:	
0638442	Air Motor 230/120	0638442
0638701	Material Pump 153/120	0638701
0621773	High-Pressure Filter	0621773
0467782	M30 Filter Insert	
0601594	Safety Valve, 101.5 psi	
0648096	Air Maintenance Unit	0648096
4300000	Cart	
4300002	Professional Adapter	
0474487	Ground Wire	
0163333	Throat Seal Liquid	
0632579	Pneumatic Oil	

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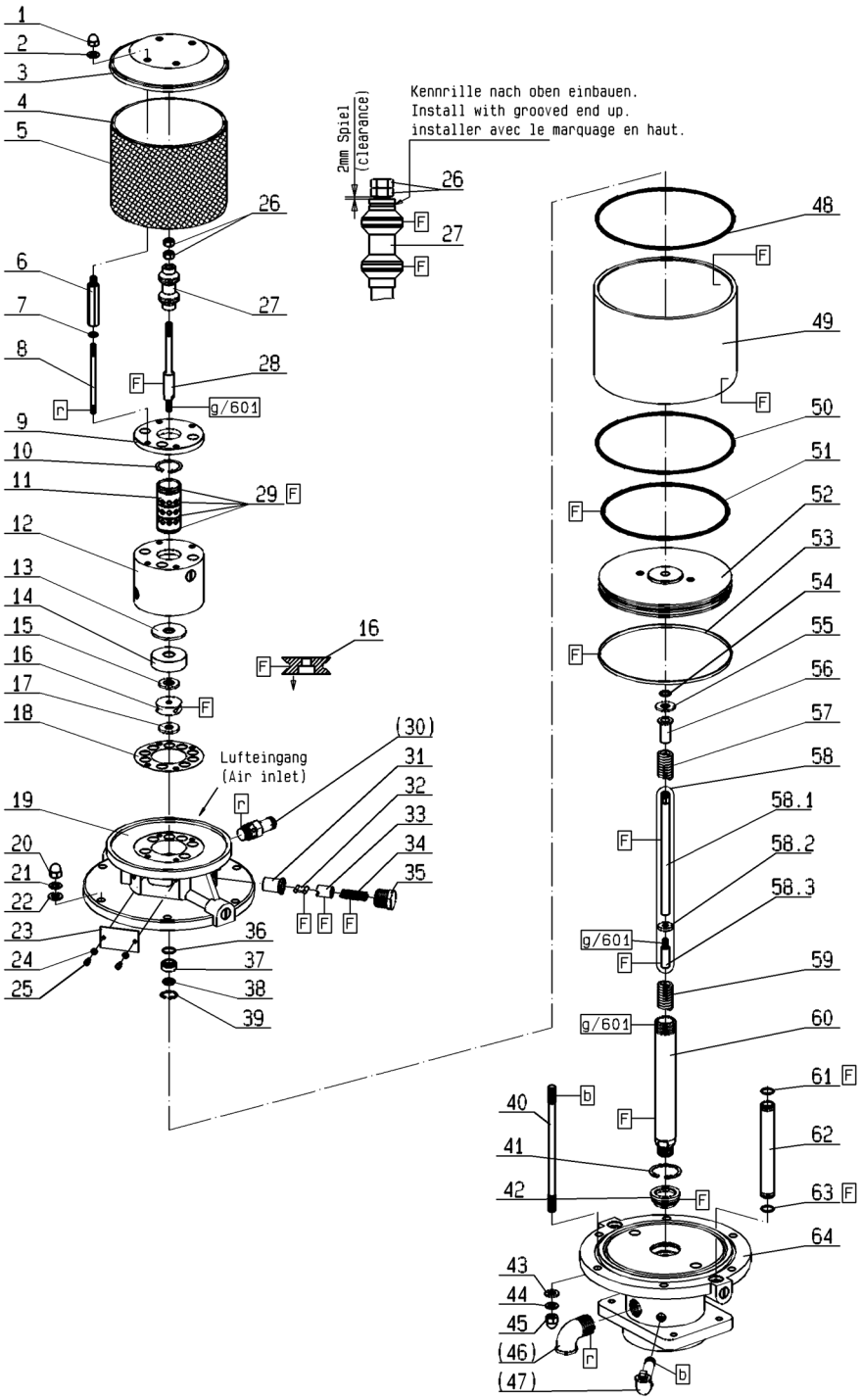
Luftmotor • Air Motor • Moteur pneumatique: Typ D 230/120

Bestell-Nr. • Order-No. • Référence: **0638442** Serie • Serie • Série: **000** Akt.: **30.09.08**



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Pos.-Nr. in Klammern () sind keine Betandteile dieser Baugruppe / items markedthus () are not part of assembly shown / Les pièces entre paranthèses ne font pas partie du sous-groupe

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Pos. Pos. Code	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V^1 / D^2 / R^3	Artikelbezeichnung	Part Déscription	Désignation des articles
1.	0460249	4		Hutmutter	dome nut	écrou à capuchon
2.	0460613	4		U-Scheibe	washer	rondelle
3.	0639201	1		Deckel	cover	couvercle
4.	0639053	1		Dämmring	muffler	silencieux
5.	0639052	1		Lochblech	perf. metal housing	tôle perforée
6.	0639202	4		Gewindestück	threaded piece	douille filetée
7.	0460214	4		U-Scheibe	washer	rondelle
8.	0465631	4		Stehbolzen	threaded bolt	boulon
9.	0473510	1		Deckel	cover	couvercle
10.	0465682	1	R	Sicherungsring	retaining ring	circlip
11.	0461881	1		Steuerzylinder	control cylinder	cylindre de contrôle
12.	0461911	1		Steuergehäuse kpl.	control housing cpl.	corps de contrôle cpl.
13.	0638828	1	V. R	Dämpfungsscheibe	dampening spacer	rondelle
14.	0638441	1		Führungsscheibe	guide disc	disque de guidage
15.	0415278	1	V. R	Dämpfungsscheibe	dampening spacer	rondelle
16.	0220752	1	V. R	Mitnehmer	carrier	toc d'entrainement
17.	0466875	1	V. R	Dämpfungsscheibe	dampening spacer	rondelle insonorisante
18.	0465674	1	D, R	Dichtung	gasket	joint
19.	0638438	1		Oberteil kpl.	cylinder head assembly	partie supérieur cpl.
20.	0463795	4		Hutmutter	dome nut	écrou borgne
21.	0460931	6		Federring	spring ring	rondelle elastique
22.	0461091	6		U-Scheibe	washer	rondelle
23.	0220736	1		Deckel	cover	couvercle
24.	0460230	2		U-Scheibe	washer	rondelle
25.	0460443	2		Schraube	screw	vis
26.	0460648	2	R	Mutter	nut	écrou
27.	0465704	1	V. R	Steuerkolben kpl.	control piston assembly	piston de contrôle cpl.
28.	0465690	1		Steuerachse	control axle	axe de contrôle
29.	0311189	4	D, R	O-Ring	o-ring	joint torique
(30.)	***	1		Sicherheitsventil	safety valve	soupape de sécurité
31.	0220779	2		Lagerbuchse	bearing bush	coussinet
32.	0163813	2	V	Schnäpper	toggle	bascule
33.	0220787	2	V	Schnäpperlager	toggle bearing	roulement
34.	0415154	2	V	Druckfeder	spring	ressort
35.	0220760	2		Halteschraube	retaining screw	vis d'arrêt
36.	0310182	1	D,R	O-Ring	o-ring	joint torique
37.	0489808	1		Führungsbuchse	guide bush	coussinet
38.	0311103	1	V, D, R	Nutring	u-seal	joint en >u<
39.	0461296	1	R	Sicherungsring	retaining ring	circlip
40.	0489891	6		Stehbolzen	threaded bolt	boulon
41.	0461237	1	R	Sicherungsring	retaining ring	circlip
42.	0478695	1	V,D,R	Führungsbuchse	guide bush	coussinet
43.	0461091	6		U-Scheibe	washer	rondelle

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Luftmotor • Air Motor • Moteur pneumatique: **Typ D 230/120**

Bestell-Nr. • Order-No. • Référence: **0638442** Serie • Serie • Série: **000** Akt.: **30.09.08**

Pos. Pos. Code (Forts.)	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V^1 / D^2 / R^3	Artikelbezeichnung	Part Déscription	Désignation des articles
44.	0460931	6		Federring	spring ring	rondelle élastique
45.	0463795	6		Hutmutter	dome nut	écrou borgne
(46.)	0471666	1		Winkel	elbow	coude
(47.)	0163635	1		Einfüllstutzen	filler neck	tube de remplissage
48.	0625978	1	D,R	O-Ring	o-ring	joint torique
49.	0638829	1	V	Zylinder	cylinder	cylindre
50.	0625978	1	D,R	O-Ring	o-ring	joint torique
51.	0625989	1	V,D,R	O-Ring	o-ring	joint torique
52.	0628834	1		Kolbenplatte	piston plate	plateau de piston
53.	0625990	1	V,D,R	Führungsband	guide ring	bague de guidage
54.	0311235	1	V,D,R	O-Ring	o-ring	joint torique
55.	0221368	1	V,R	Scheibe	disc	disque
56.	0221414	1		Anschlagbuchse	stop guide	douille d'arrêt
57.	0415170	1	R	Druckfeder	spring	ressort
58.	0639059	1	V	Umsteuerachse kpl. bestehend aud Pos.58.1-58.3	guide axle assembly consisting of pos.58.1-58.3	axe d'inversion cpl. consistant en pos.58.1-58.3
58.1	0638830	1		Achse	axle	axe
58.2	0638831	1		Scheibe	disc	disque
58.3	0221406	1		Anschlagbolzen	stop bolt	boulon de butée
59.	0415170	1	R	Druckfeder	spring	ressort
60.	0638833	1	V	Motorachse	motor axle	axe de moteur
61.	0310182	2	D,R	O-Ring	o-ring	joint torique
62.	0638440	2		Belüftungsrohr	air inlet pipe	tube de prise d'air
63.	0310182	2	D,R	O-Ring	o-ring	joint torique
64.	0638439	1		Unterteil kpl.	bottom assembly	partie inférieur cpl.
				ohne Abbildung	not illustrated	sans illustration
	0463787	2		Ringmutter	ring nut	écrou à anneau
	0639249	1	R	Dichtungssatz	seal kit	jeu de joints
	0639250	1		Reparatursatz	repair kit	jeu de réparation

**Best.-Nr.für Sicherheitsventil siehe Maschinenkarte - Order number for safety valve see card of machines - Référence de soupape de sureté voir carte machine

[1]V= Verschleißteile • Wear parts • Pièces d'usure usuelles
[2]D= Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints
[3]R= Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de reparation
[3]R_G = Teile des Reparatursatzes, groß • Parts of repair kit, big • Pièces de kit de reparation grand
[3]R_K = Teile des Reparatursatzes, klein • Parts of repair kit, small • Pièces de kit de reparation, petit

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Luftmotor • Air Motor • Moteur pneumatique: Typ D 230/120

Bestell-Nr. • Order-No. • Référence: **0638442** Serie • Serie • Série: **000** Akt.: **30.09.08**

Sicherungsmittel / Thread sealant / produit d'etanchéite

Symbol / Symbol / Symbole	Beschreibung / Description / Description	Artikel / Bestell-Nr. Article / Order-No. L'article / Référenz
r	schwach / light / leger (50 ml)	222 / 0000016
b	mittel / medium / medium (50 ml)	243 / 0000015
schw	mittel, Kunststoff-Stahl / medium, plastic-steel / medium, plastique-acier (20 ml)	480 / 0000107
g	hochfest / high-streng / hautesistance (50 ml) hochfest für Cr/Ni-Teile / for Cr/Ni steel parts / pour partes fabriqué de Cr/Ni (50 ml)	601 / 0000014 2701 / 0000303
p	Rohrdichtungspaste / pipe sealant / pâte d'étanchéité pour tuyaux (50 ml)	225 / 0000017
a	Aktivator / activator / activateur (500 ml) Aktivator für Kunststoffteile / activator for plastic parts / activateur pour pièces de plastique (10 ml)	734 / 0000018 770 / 0000108
t	Gewindeband / threaded tape / ruban de filetage	/ 0000099

Betriebsmittel / Machinery materials / Équipement de production

Symbol / Symbol / Symbole	Beschreibung / Description / Description	Bestell-Nr. Order-No. Référenz
F	Fett, säurefrei / acid-free / sans acide	0000025
T	Trennmittel / release agent / agent séparateur bei Verarbeitung von Isozyanat / for application with isozyanate / pour l'application de l'isozyanate	0163333 0640651
M	Montagepaste (für R- und RS-Ausführung) / assembly paste (for version R or RS) / pâte d'assemblage (de version R et RS)	0000045

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Before beginning any repairs or maintenance on the unit, read all instructions found in the User's Handbook and observe them closely.

The User's Manual must be available at all times when working on the unit.

In this chapter you will find information pertaining to troubleshooting the air motor. The disassembly and reassembly are described step by step. In addition, you will find an exploded line drawing of the air motor, as well as the related spare parts lists at the conclusion of the troubleshooting section.

- First, check the fault's cause in the table found in Chapter 10.2.1.
- Disassemble the air motor as necessary according to Chapter 10.2.2.
- Once the fault has be repaired, reassemble the air motor according to the instructions found in Chapter 10.2.3. **Please note that the steps are to be followed in the reverse order (from 8 to 1) as they correspond with the steps 1 to 8 in the section on disassembly.**

The assembly instructions include information concerning the use of grease, thread sealant, allowable torque, etc.

Fault	Probable Cause	Solution
A)Inbound air used to drive the motor is leaking from the control piston into the muffler **Pos. 4+5** (air motor continues to run but becomes slower at the same inbound air pressure)	1. Control piston is worn **Pos. 27**	1. Replace (Step 1-2)
	2. U-seal is worn **Pos. 38**	2. Replace (Step 1-6)
	3. O-ring is worn **Pos. 51**	3. Replace (Step 1-7)
	4. Gasket is defect **Pos. 18**	4. Replace (Step 1+2)
	5. O-ring is worn **Pos. 54**	5. Replace (Step 1-7)
B)Air blows out of the lower motor housing drain hole **Pos. 64** (air motor continues to run)	1. Guide bush is worn **Pos. 42**	1. Replace (Step 1-8)
C)Inbound air used to drive the motor is leaking from the control piston into the muffler **Pos. 4+5** (air motor is blocked)	1. Toggle **Pos. 32** is no longer seated in either the toggle bearing **Pos. 33** or the carrier **Pos. 16**.	1. Repair (Step 1-3/4)
	2. Guide axle spring **Pos. 58** and/or **59** is broken	2. Replace (Step 1-7)
D)Air motor doesn't run.	**See (C) above**	
E)Air motor is not able to reach its full performance level	1. Insufficient inbound air	1. Check the size of the inbound air line and the compressor's output
	2. Muffler is clogged **Pos. 4**	2. Replace (Step 1)

RA053+054+057+058+061+062+065+066•e•02.03
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General Instructions:

- Turn off the inbound air supply and depressurize the unit.
- Disconnect the material pump from the air motor. To accomplish this, follow the instructions found in Chapter 10.1.2.

Proceedure

Step 1

- Use a bench vise to hold the air motor in place at its bottom assembly **Pos. 64**.
- Remove the four dome nuts **Pos. 1** and four washers **Pos. 2** using an open-end wrench (SW 17).
- Remove the cover **Pos. 3**, the perf. metal housing **Pos. 5** and the muffler **Pos. 4**.

Step 2

- Unscrew the four threaded pieces **Pos. 6** and washers **Pos. 7** using an open-end wrench (SW 17) from the threaded bolts **Pos. 8**.
- Remove the cover **Pos. 9** from the control housing **Pos. 12**.
- Remove the control housing **Pos. 12** (including the retaining ring **Pos. 10**, the o-ring **Pos. 29** and the control cylinder **Pos. 11**) from the cylinder head **Pos. 19**.
- Using circlip pliers (A3), remove the retaining ring **Pos. 10** from the control housing **Pos. 12**.
- Use an appropriate mandrel to tap the control cylinder **Pos. 11** out of the control housing.
  Warning! To avoid damage to the control cylinder, never pull it out of the control housing using pliers.
- Remove the four o-rings **Pos. 29** from the control cylinder **Pos. 11**.
- Unscrew the two nuts **Pos. 26** from the control piston **Pos. 27** using an open-end wrench (SW 17).
- Remove the control piston **Pos. 27**.
- Remove the gasket **Pos. 18** from the cylinder head.

Step 3

- Remove the retaining bolt **Pos. 35** by using a socket wrench (SW 32).
- Remove the spring **Pos. 34**.
- Using circlip pliers (A1), remove the toggel **Pos. 32** (incl. toggel bearing **Pos. 33**), as well as the bearing bush **Pos. 31** (if necessary).
- Repeat these steps for the retaining bolt on the other side of the air motor.
- Remove the two screws **Pos. 25** and washers **Pos. 24** from the air motor cover **Pos. 23**.

Step 4

- Screw an M8 nut onto the end of each of the four threaded bolts **Pos. 8** and then add a second nut to each bolt to counter (lock) the first one.
- Remove the 4 threaded bolts **Pos. 8** with an open-end wrench (SW 13) from the cylinder head.
- Use a flathead screwdriver to carefully pry the dampening spacer **Pos. 13**, the guide disc **Pos. 14** and the other dampening spacer **Pos. 15** out of the cylinder head.
- Remove the control axle **Pos. 28**.
- Push the dampening spacer **Pos. 17** away from the carrier **Pos. 16** to expose the wrench flats.
- Using two open-end wrenches (SW 12 and SW 14), remove the control axle **Pos. 28** from the guide axle **Pos. 58**.(If the control axle can not be turned, the connection between the control and guide axles has to be heated with a gas torch to release the grip of the sealant applied to the threadings.)

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- Remove the carrier **Pos. 16** and the dampening spacer **Pos. 17** from the guide axle.

Step 5

- Loosen the dome nuts **Pos. 20+45** and two eyebolts (**without Pos.**) using an open-end wrench (SW 17).
- Remove these along with the spring rings **Pos. 21+44** and washers **Pos. 22+43**.
- Remove the six threaded bolts **Pos. 40**.
- Remove the cylinder head **Pos. 19** from the cylinder **Pos. 49**.

Step 6

- Using circlip pliers (J2), remove the retaining ring **Pos. 39** from the cylinder head **Pos. 19**.
- Use a flathead screwdriver to carefully remove the u-seal **Pos. 38** and guide bush **Pos. 37** from the cylinder head.
- Remove the o-ring **Pos. 36** from the guide bush.
- Remove the o-ring **Pos. 48** from the cylinder head.

Step 7

- Remove the two air inlet pipes **Pos. 62** and o-rings **Pos. 61+63** from the bottom assembly **Pos. 64**.
- Remove the cylinder **Pos. 49** by tipping it to the side while at the same time lifting the piston plate **Pos. 52**.
- Remove the piston plate **Pos. 52** together with the guide axle **Pos. 58** and motor axle **Pos. 60** from the bottom assembly **Pos. 64**.
- Remove the o-ring **Pos. 50** from the bottom assembly **Pos. 64**.
- Using circlip pliers (J2), remove the retaining ring **Pos. 41** from the bottom assembly **Pos. 64**.
- Press the guide bush **Pos. 42** from below out of the bottom assembly **Pos. 64** (with the motor axel if necessary).

Step 8

- Remove the o-ring **Pos. 51** and the guide ring **Pos. 53** from the piston plate **Pos. 52**.
- Screw two hexagonal bolts (M12 DIN 933) into the piston plate **Pos. 52**.
- Span the piston plate **Pos. 52** in a bench vise at the hexagonal bolts. (Minimum vise jaw width = 120 mm / 4.7 in.)
- Using an open-end wrench (SW 30) remove the motor axle **Pos. 60** from the piston plate. (If the motor axle can not be turned, the connection between the motor axle and the piston plate has to be heated with a gas torch to release the grip of the sealant applied to the threadings.)
- Remove the washer **Pos. 55** and the o-ring **Pos. 54** from the piston plate.
- Pull the guide axle **Pos. 58** together with the stop guide **Pos. 56** and spring **Pos. 57** out of the motor axle **Pos. 60**.

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General Instructions:

- **Please note, the below instructions are numbered in reverse order to correspond to the same steps found in the previous chapter! Begin with Step 8.**
- Before assembly, clean all components thoroughly.
- Replace damaged parts with new ones.
  (Motor axle, guide axle, and cylinder may not show any signs of wear or scoring.)

Procedure:

Step 8

- Screw two hexagonal bolts (M12 DIN 933) into the piston plate **Pos. 52**.
- Span the piston plate **Pos. 52** in a bench vise at the hexagonal bolts.
  (Minimum vise jaw width = 120 mm / 4.7 in.)
- Place an o-ring **Pos. 54** and washer **Pos. 55** into the groove at the middle of the piston plate **Pos. 52**.
- Mount a spring **Pos. 57** and the stop guide **Pos. 56** to the guide axle **Pos. 58**.
- Grease the two springs **Pos. 57+59**.
- Place the spring **Pos. 59** into the motor axle **Pos. 60**.
- Place the complete guide axle **Pos. 58** with spring and stop guide into the motor axle **Pos. 60**.
- Apply high-strength thread sealant (i.e. Loctite®) to the larger threading of the motor axle **Pos. 60**.
- Feed the guide axle through the washer and o-ring in the piston plate and screw the motor axle **Pos. 60** tightly to the piston plate using an open-end wrench (SW 30).
- Grease the motor axle and the outer edge of the piston plate.
- Place the guide ring **Pos. 53** and an o-ring **Pos. 51** into the corresponding groove in the piston plate.
- Remove the piston plate from the bench vise and remove the two hexagonal bolts (M12).

Step 7

- Span the bottom assembly **Pos. 64** in a bench vise with the mouting surface for the piston plate showing upward.
- Lightly grease the guide bush **Pos. 42**.
- Place the guide bush **Pos. 42** into the bottom assembly **Pos. 64** (if necessary, use a rubber mallet)
- Using circlip pliers (J2) place the retaining ring **Pos. 41** onto the guide bush.
- Place an o-ring **Pos. 50** into the greased groove in the bottom assembly.
- Lead the motor axle **Pos. 60** carefully through the guide bush **Pos. 42** until the piston plate rests on top of the bottom assembly.
- Evenly grease the inner wall of the cylinder **Pos. 49**.
- Mount the cylinder **Pos. 49** by tipping it to the side while pressing it over the piston plate **Pos. 52** onto the bottom assembly **Pos. 64**.
- Place the two air inlet pipes **Pos. 62** together with the o-rings **Pos. 61+63** onto the bottom assembly **Pos. 64**.
- Pull the piston plate **Pos. 52** with the guide axle upward until the piston plate is approx. 1 cm / .4 in. under the upper rim of the cylinder.

Step 6

- Place an o-ring **Pos. 48** into the greased groove found in the cylinder head assembly **Pos. 19**.
- Place an o-ring **Pos. 36** onto the guide bush **Pos. 37**.
- Place the greased guide bush **Pos. 37** into the cylinder head.
- Place the u-seal **Pos. 38** with the groove to the outside onto the guide ring **Pos. 37**.

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- Using circlip pliers (J2), mount the retaining ring **Pos. 39**.

Step 5

- Place the cylinder head **Pos. 19** onto the cylinder **Pos. 49**.
  The cylinder **Pos. 49** must fit into the corresponding groove and the air inlet pipes **Pos. 62** through the foreseen holes.
  Warning! Pay attention to the position of the cylinder head:
  a) cart-frame mounting: The connection for the air maintenance unit must be opposite the elbow **Pos. (46).**
  b) wall-frame mounting: The connection for the air maintenance unit must be positioned 90° to the elbow **Pos. (46)**.
- Position the air inlet pipes **Pos. 62** to stand vertically.
- Screw one nut **Pos. 20** each onto four threaded bolts **Pos. 40** and one ring nut each onto two threaded bolts.
- Place the threaded bolts **Pos. 40** together with one washer **Pos. 22** and one spring ring **Pos. 21** from above through the holes found in the cylinder head and bottom assembly.
- Ensure to place the two threaded bolts with ring nuts opposite of one another - but not next to the connection for the air maintenance unit.
- Using the remaining washers **Pos. 43**, spring rings **Pos. 44** and dome nuts **Pos. 45,** fasten the threaded bolts to the bottom assembly.
- Tighten the nuts in a cross pattern using an open-end wrench (SW 17).

Step 4

- First, place the dampening spacer **Pos. 17** and then the carrier **Pos. 16** (with the counterbore showing downward) onto the guide axle **Pos. 58**.
- Apply high-strength thread sealant (i.e. Loctite®) to the lower threading of the control axle **Pos. 28**.
- Using two open-end wrenches (SW 12+14), screw the control axle **Pos. 28** to the guide axle **Pos. 58** tightly.
- Place the dampening spacer **Pos. 15** onto the control axle.
- Place the guide ring **Pos. 14** and dampening spacer **Pos. 13** into the groove in the cylinder head.
- Apply medium-strength thread sealant (i.e. Loctite®) to the threading of all threaded bolts **Pos. 8** that will be screwed into the cylinder head **Pos. 19**.
- Using two counterlocked nuts, screw each threaded bolt **Pos. 8** into the cylinder head. An open-end wrench (SW 13) is required.

Step 3

- Align the guide axle **Pos. 58** in such a manner that the carrier **Pos. 16** is located at the holes for the toggle bearings **Pos. 33**.
  Warning! The carrier grooves must be facing toward the holes.
  Note: Make a visual check through the opening behind the cover **Pos. 23.**
- Place the the bearing bush **Pos. 31** into the hole at the side of the cylinder head.
- Grease the toggle bearing **Pos. 33** and the toggle **Pos. 32**.
- Place the toggle into the toggle bearing.
- Lead the toggle bearing with the toggle first into the bearing bush.
  Note: The toggle **Pos. 32** must be seated into the carrier **Pos. 16** - make a visual check through the opening behind the cover **Pos. 23**.
- Place the spring **Pos. 34** into the retaining screw **Pos. 35**.
- Grease the spring **Pos. 34**.
- Screw the retaining screw **Pos. 35** into the cylinder head using a socket wrench (SW 32).
- Repeat the steps above in Step 4 for mounting the second toggle assembly.
- Close the control opening with the cover **Pos. 23+24+25**.

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Step 2

- Place the gasket **Pos. 18** onto the cylinder head **Pos. 19**.
  Warning! The holes for both parts must be aligned properly.
- Mount the control piston **Pos. 27** to the control axle **Pos. 28**.
  Warning! The long side with the groove must be facing upward.
- Screw a nut **Pos. 26** onto the control axle **Pos. 28** by using an open-end wrench (SW 17).
  Warning! A space of 2mm / .08 in. must remain between the control piston and the nut.
- Counter (lock) the nut with a second nut **Pos. 26**.
- Lightly grease the control piston **Pos. 27**.
- Slide four o-rings **Pos. 29** onto the control cylinder **Pos. 11**.
- Place the control cylinder into the control housing **Pos. 12**.
- Place the control housing **Pos. 12** over the control piston and onto the cylinder head **Pos. 19**.
- Using circlip pliers (A3), place a retaining ring **Pos. 10** onto the groove in the control cylinder **Pos. 11**.
- Place the cover **Pos. 9** onto the control housing **Pos. 12**.
- Screw the four threaded pieces **Pos. 6** with one washer **Pos. 7** each onto the threaded bolts **Pos. 8**. Tighten them in a **cross** pattern with an open-end wrench (SW 17).

Step 1

- Place the muffler **Pos. 4** and the perf. metal housing **Pos. 5** onto the cylinder head **Pos. 19**.
- Place the cover **Pos. 3** onto the muffler and perf. metal housing.
- Screw the four dome nuts **Pos. 1** to tighten down the cover in a **cross** pattern. This requires an open-end wrench (SW 17).

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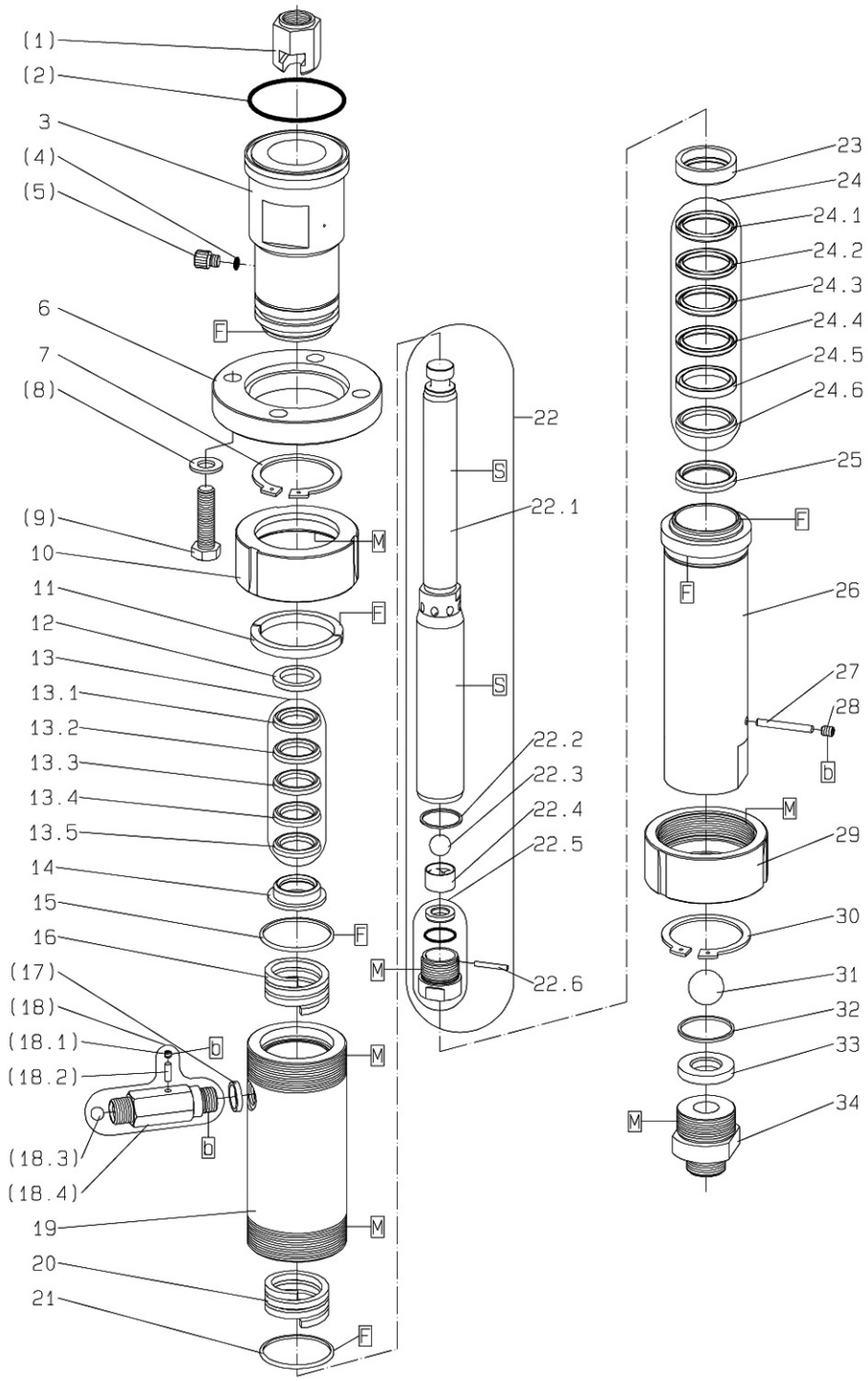
HD 153/120 - N

Bestell-Nr. • Order-No. • Référence: **0638701** Serie • Serie • Série: **000** Akt.: **23.11.05**



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[2]D= Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints
[3]R= Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de reparation

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Sicherungsmittel 50ml • Thread sealant 50ml • produit d'etanchéite 50ml

r	schwach • light • leger	Best.-Nr.: 0000016
b	mittel • medium • medium	Best.-Nr.: 0000015
g	hochfest • high-streng • hautesistance	Best.-Nr.: 0000014

Schmiermittel • Lubrication grease • Matiére graisse

F	Fett, säurefrei • acid-free • sans acide	Best.-Nr.: 0000025
S	Spülmittel • lubricating fluid • produit de nettoyage	Best.-Nr.: 0163333
M	Montagepaste (für R- und RS-Ausführung) • assembly paste (for version R or RS) • pâte d'assemblage (de version R et RS)	Best.-Nr.: 0000045

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Pos. Pos. Code	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V[1] / D[2] / R[3]	Artikelbezeichnung	Part Déscription	Désignation des articles
(1.)	0221449	1		Kupplungsstück	coupling piece	pièce d'accouplement
(1)	0642843	1		Kupplungsstück für HDP 153.23	coupling piece (HDP 153.23)	pièce d'accouplement (HDP 153.23)
(2.)	0496928	1	D, R	O-Ring	o-ring	joint torique
3.	0638535	1		Hochdruckkopf	high pressure head	tête à haute pression
(4.)	0310239	1	D, R	O-Ring	o-ring	joint torique
(5.)	0210714	1		Ablassschraube	draining screw	vis de remplissage
6.	0638676	1		Anzugring	connecting ring	bague de montage
7.	0638681	1		S-Ring	reatining ring	circlip
(8.)	0460036	4		U-Scheibe	washer	rondelle
(9.)	0607401	4		Schraube	screw	vis
(9)	0630652	4		Schraube für HDP 153.23	screw (HDP 153.23)	vis (HDP 153.23)
10.	0640209	1		Anzugmutter	retaining cap	écrou de serrage
11.	0638675	1		Ring geteilt	ring divided	anneau divisé
12.	0638700	1		Sattelring	saddle ring	bague de retenue
13.	0638702	1	V, R	Manschettensatz	packing ring set	jeu de joints
13.1	0630857	1	V, R	Manschette Teflon	packing ring teflon	joint en teflon
13.2	0631872	1	V, R	Manschette Leder	packing ring leather	joint cuir
13.3	0630857	1	V, R	Manschette Teflon	packing ring teflon	joint en teflon
13.4	0631872	1	V, R	Manschette Leder	packing ring leather	joint cuir
13.5	0630857	1	V, R	Manschette Teflon	packing ring teflon	joint en teflon
14.	0630858	1		Gegenring	counter ring	contre-anneau
15.	0630855	1	D, R	Dichtring	gasket	joint
16.	0638683	1		Druckfeder	spring	ressort
(17.)	0222119	1	D, R	Dichtring	gasket	joint
(18.)	0061077	1		Rückschlagventil bestehend aus Pos. (18.1)-(18.4)	non return valve consisting of pos.(18.1)-(18.4)	soupape de non-retour consistant en pos. (18.1)-(18.4)
(18.1)	0471798	1		Gewindestift	threaded pin	vis sans tête
(18.2)	0471801	1		Zylinderstift	cylindrical pin	goupille cylindrique
(18.3)	0412279	1		Kugel	ball	bille
(18.4)	0214361	1		Ventilgehäuse	valve housing	corps de vanne
19.	0638539	1		Federgehäuse	spring housing	logement de ressort
20.	0638683	1		Druckfeder	spring	ressort
21.	0630855	1	D, R	Dichtring	gasket	joint
22.	0647604			Doppelkolben kpl. bestehend aus Pos. 22.1-22.6	dual piston cpl. consisting of pos. 22.1-22.6	piston double cpl. consistant en pos. 22.1-22.6

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b	mittel • medium • medium	Best.-Nr.: 0000015
g	hochfest • high-streng • hautesistance	Best.-Nr.: 0000014

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Bestell-Nr. • Order-No. • Référence: **0638701** Serie • Serie • Série: **000** Akt.: **23.11.05**

Pos. Pos. Code (Forts.)	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V[1] / D[2] / R[3]	Artikelbezeichnung	Part Déscription	Désignation des articles
22.1	0633932	1	V	Doppelkolben	dual piston	piston double
22.2	0222100	1	D, R	Dichtung	gasket	joint
22.3	0463663	1	V, R	Kugel	ball	bille
22.4	0605743	1		Kugelführung	ball guide	guidage de bille
22.5	0606472	1	V	Ventilgehäuse kpl.	valve housing cpl.	corps de vanne cpl.
22.6	0472344	1		Zylinderstift	cylindrical pin	goupille cylindrique
23.	0633934	1		Gegenring	counter ring	contre-anneau
24.	0638703	1	V, R	Manschettensatzsatz bestehend aus Pos. 24.1-24.6	packing ring set consiting of pos. 24.1-24.6	jeu de joints consistant en pos. 24.1-24.6
24.1	0633936	1	V, R	Manschette Teflon	packing ring teflon	joint en teflon
24.2	0311960	1	V, R	Manschette Leder	packing ring leather	joint cuir
24.3	0633936	1	V, R	Manschette Teflon	packing ring teflon	joint en teflon
24.4	0311960	1	V, R	Manschette Leder	packing ring leather	joint cuir
24.5	0633935	1	V, R	Doppelsattelring	dual saddle ring	bague de retenue double
24.6	0633936	1	V, R	Manschette Teflon	packing ring teflon	joint en teflon
25.	0633933	1		Gegenring	counter ring	contre-anneau
26.	0638673	1		Druckzylinder	pressure cylinder	cylindre de pression
27.	0621250	1		Zylinderstift	cylindrical pin	goupille cylindrique
28.	0638682	1		Gewindestift	threaded pin	vis sans tête
29.	0640209	1		Anzugmutter	retaining cap	crou de serrage
30.	0638681	1		S-Ring	retaining ring	circlip
31.	0463698	1	V, R	Kugel	ball	bille
32.	0641780	1	D, R	Dichtung	gasket	joint
33.	0415286	1	V	Ventilplatte	valve plate	plaque de serrage
34.	0638678	1		Doppelnippel	male adaptor	raccord double mâle
	0639171		R	Dichtungssatz	seal kit	jeu de joints
	0639177			Reparatursatz	repair kit	jeu de reparation
				optional erhältlich	optional	disponible en option
13				Manschetten oben	packing ring upper	joints superieures
	0630857		V	Manschette Teflon, schwarz	packing ring Teflon, black	joints Teflon, noir
	0631872		V	Manschette Leder	packing ring leather	joints cuir
	0644849		V	Manschette Teflon, weiss	packing ring teflon, white	joint en teflon, blank
	0632641		V	Manschette SDM, hellgrün	packing ring SDM, light-green	joint en SDM, vert clair
	0646980		V	Manschette PUR, rot	packing ring PUR, red	joint en PUR, rouge
				Manschetten unten	packing ring lower	joints inferieures
24	0633936		V	Manschette Teflon, schwarz	packing ring Teflon, black	joints Teflon, noir

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Pos. Pos. Code (Forts.)	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V^1 / D^2 / R^3	Artikelbezeichnung	Part Déscription	Désignation des articles
	0311960		V	Manschette Leder	packing ring leather	joints cuir
	0644850		V	Manschette Teflon, weiss	packing ring teflon, white	joint en teflon, blank
	0644507		V	Manschette SDM, hellgrün	packing ring SDM, light-green	joint en SDM, vert clair
	0646981		V	Manschette PUR, rot	packing ring PUR, red	joint en PUR, rouge
				Werkzeuge für Montage-Demontage, ohne Abbildung	Assembly/Disassembly tools not illustrated	outillage pour montage/ demontage sans illustration
	0465399			Einmaulschlüssel für Pos.03	open-jaw wrench for pos.03	clé à fourche simple sans pos. 3
	0465380			Einmaulschlüssel für Pos. 31	open-jaw wrench for pos. 31	clé à fourche simple sans pos. 31
	0465364			Einmaulschlüssel für Pos. 39	open-jaw wrench for pos. 39	clé à fourche simple sans pos. 39
	0613878			Hakenschlüssel für Pos. 10+34	hook spanner for pos. 10+34	clé à ergot sans pos. 10 + 34

[1]V= Verschleißteile • Wear parts • Pièces d'usure usuelles
[2]D= Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints
[3]R= Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de reparation

Pos.-Nr. in Klammern () sind keine Betandteile dieser Baugruppe
• items markedthus () are not part of assembly shown
• Les pièces entre paranthéses ne font pas partiedu sous-groupe

Sicherungsmittel 50ml • Thread sealant 50ml • produit d'etanchéite 50ml

r	schwach • light • leger	Best.-Nr.: 0000016
b	mittel • medium • medium	Best.-Nr.: 0000015
g	hochfest • high-streng • hautesistance	Best.-Nr.: 0000014

Schmiermittel • Lubrication grease • Matiére graisse

F	Fett, säurefrei • acid-free • sans acide	Best.-Nr.: 0000025
S	Spülmittel • lubricating fluid • produit de nettoyage	Best.-Nr.: 0163333
M	Montagepaste (für R- und RS-Ausführung) • assembly paste (for version R or RS) • pâte d'assemblage (de version R et RS)	Best.-Nr.: 0000045

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Before beginning any repairs or maintenance on the unit, read all instructions found in the User's Handbook and observe them closely.

The User's Manual must be available at all times when working on the unit.

In this chapter you will find information pertaining to troubleshooting the material pump. The disassembly and assembly are described step for step. In addition, you will find an exploded line drawing of the material pump, as well as the related spare parts lists at the conclusion of the troubleshooting section.

- First, check the faults cause in the table found in Chapter 10.1.1.
- Disassemble the material pump as necessary according to Chapter 10.1.2.
- Once the fault has been repaired, reassemble the material pump according to the instructions found in Chapter 10.1.3.

The assembly instructions include additional information concerning the use of grease, Loc-Tite, allowable torque, etc.

Fault	Probable Cause	Solution
A) Pump operates, but no spray material reaches the spray tip.	1. Suction screen is clogged.	1. Clean the screen.
	2. Suction hose is clogged.	2. Replace hose.
	3. The ball in the bottom valve does not lift (sticks).	3. - Operate spray gun without tip. - Open the drain valve on the high pressure filter. - Tap the bottom valve lightly on the side with a hammer. - Remove suction system and use a rod or screwdriver to loosen the ball in the bottom valve from below.
	4. Bottom valve does not close.	4. Remove bottom valve and clean the ball and seat thoroughly (Steps 1-4 & 7)
B) Pump operates irregularly (noticable by different speeds for upward and downward strokes) and does not produce the required spraying pressure.	1. Bottom valve leaking (Pump always stops on upwards stroke when spray gun is closed).	1. Remove bottom valve and clean ball and seat thoroughly or replace ball and valve seat as necessary. (Steps1-4+7)
	2. Piston valve leaking (Pump always stops on downward stroke when spray gun is closed).	2. Clean the ball and seat in the piston valve, and inspect and replace as necessary. (Steps1-4+8)
	3. Upper or lower packing leaking (worn).	3. Replace packing. (Steps 1-6+8)
C) Spray material reaches spray gun, but pump does not stop operating when gun is closed.	1. Packing or valve worn.	1. Replace worn parts. (Steps 1-8)

RM051+053 •e•02.03

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General Instructions:

- For simple disassembly/assembly, place the high-pressure pump in a horizontal position by laying the cart down.

Procedure

Step 1

- Using an open-end wrench SW 22 remove the 4 screws **Pos. (9)** and the 4 washers **Pos. (8)** on the flange.
- Carefully supply compressed air to the air motor.
  The motor axle will push the dual piston downwards, releasing the material pump from the air motor.
  Attention! to prevent injury or damage, a second person should hold the material pump during this step. Take note of the position of the coupling between the material pump and the air motor. To prevent the material pump from falling, insure that the opening of the coupling faces upwards. Close the air supply as necessary and turn the coupling with an open-end wrench SW 36.
- Remove the dual piston **Pos. 22** from the coupling on the air motor.

Step 2

- Span the pressure cylinder **Pos. 31** on the wrench flats in a bench vise.

Step 3

- Using a hook-spanner 110/115, loosen the retaining cap **Pos. 10** at the connection spring housing **Pos. 19** / pump head **Pos. 3**.
- Remove the pump head **Pos. 3** incl. packing together with the flange **Pos. 6** and the retaining cap **Pos. 10** from the spring housing **Pos. 19**.

Step 4

- Using a hook-spanner 110/115, loosen the retaining cap **Pos. 34** at the connection spring housing **Pos. 19** / pressure cylinder **Pos. 31**.
- Remove the spring housing **Pos. 19**.
- Pull the dual piston **Pos. 22** out of the pressure cylinder.
- Remove the springs **Pos. 16+20** and the seals **Pos. 15+21**from the spring housing **Pos. 19**.

Step 5

- Remove the counter ring **Pos. 14** from the pump head **Pos. 3**.
- Using a small screwdriver, lift out the packing set **Pos. 13** and the saddle ring **Pos. 12**.

Step 6

- Remove the counter ring **Pos. 28** from the pressure cylinder **Pos. 31**.
- Using a small screwdriver, pry out the packing set **Pos. 29** and the counter ring **Pos. 30**.

Step 7

- Span the male adapter **Pos. 39** with the wrench flats in a bench vise.
- Using an open-end wrench SW 65, unscrew the pressure cylinder **Pos. 31**.
- Remove the valve plate **Pos. 38**, the seal **Pos. 37** and the ball **Pos. 36** from the pressure cylinder.
- Remove - **only if necessary** - the threaded pin **Pos. 33**, in order to remove the cylindrical pin **Pos. 32**.
  To loosen the thread locking compound, the threaded pin **Pos. 33** must be heated.

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Step 8

- Span the dual piston **Pos. 22** on the wrench flats in a bench vise. The valve housing **Pos. 26** should face upwards.
- Using an open-end wrench SW 22, remove the valve housing **Pos. 26**.
- Using a pin punch, remove the cylindrical pin **Pos. 27** from the valve housing **Pos. 26**.
- Remove the ball guide **Pos. 25**, the ball **Pos. 24** and the seal from the valve housing **Pos. 23**.
  Note: Do not remove the valve plate.

Step 9

Loosen **- only as necessary -** the retaining caps **Pos. 10+34** as follows:

- Using circlip pliers A3 for external rings, remove the retaining rings **Pos. 7+ 35**.
- Remove the retaining caps.
  Note: The divided ring **Pos. 11** is found in the retaining ring **Pos. 10** on the pump head.

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General Instructions:

- Clean all parts thoroughly before assembly.
- Replace all damaged parts, as well as seals and used packings.

Procedure:

Step 9

- Push the retaining cap **Pos. 34** onto the pressure cylinder **Pos. 31**. Take note of the assembled positions: the internal threads of the retaining cap must face away from the groove for the retaining ring.
- Using circlip pliers A3 for external rings, secure the retaining cap **Pos. 34** with the retaining ring **Pos. 35**.
- Ensure that the flange **Pos. 6** is mounted with the counter-bore on the shoulder of the pump head **Pos. 3**.
- Place the divided ring **Pos. 11** in the retaining cap **Pos. 10** and mount the retaining cap **Pos. 10** in similar fashion to **Pos. 34** on the pump head **Pos. 3**.
- Secure this retaining cap with the retaining ring **Pos. 7**.

Step 8

- Span the dual piston **Pos. 22** on the wrench flats in a bench vise with the opening for the valve housing facing upwards.
- Place the ball guide **Pos. 25** and the ball **Pos. 24** in the valve housing **Pos. 26**.
- Place the cylindrical pin **Pos. 27** in the valve housing **Pos. 26**.
  Attention! The seam of the cylindrical pin must face opposite the ball in the valve housing.
- Place the seal **Pos. 23** on the valve housing **Pos. 26**.
- Grease the threads of the valve housing lightly.
- Screw the valve housing **Pos. 26** tightly into the dual piston **Pos. 22** using an open-end wrench.

Step 7

- Clean the pressure cylinder **Pos. 31** and the threaded pin **Pos. 33**.
- Press the cylindrical pin **Pos. 32** into the pressure cylinder **Pos. 31**.
- Coat the threads of the threaded pin **Pos. 33** with hard-setting Loctite.
- Screw the threaded pin **Pos. 33** into the pressure cylinder.
- Place the ball **Pos. 36** in the ball guide of the pressure cylinder **Pos. 31**.
- Place the seal **Pos. 37** and the valve plate **Pos. 38** in the pressure cylinder **Pos. 31**.
  Note: The inset side of the valve plate **Pos. 37** must face the ball **Pos. 36**.
- Screw the male adapter **Pos. 39** hand-tight onto the pressure cylinder **Pos. 31**.
- Span the male adapter **Pos. 39** on the wrench flats in the bench vise.
- Tighten the pressure cylinder **Pos. 31** tightly using an open-end wrench SW 65.

Step 6

- Place the complete packing **Pos. 28-30** in the pressure cylinder **Pos. 31**. Assembly order: counter ring **Pos. 30**, Teflon packing ring **Pos. 29.6**, Dual saddle ring **Pos. 29.5**, leather packing ring **Pos. 29.4**, Teflon packing ring **Pos. 29.3**, leather packing ring **Pos. 29.2**, Teflon packing ring **Pos. 29.1**, counter ring **Pos. 28**.

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Step 5

- Span the pump head **Pos. 3** with the counter-bore for the packing facing upwards in a bench vise.
- Place the complete packing **Pos. 12-14** in the pump head **Pos. 3**.
  Assembly order: Saddle ring **Pos. 12**, Teflon packing ring **Pos. 13.1**, leather packing ring **Pos. 13.2**, Teflon packing ring **Pos. 13.3**, leather packing ring **Pos. 13.4**, Teflon packing ring **Pos. 13.5**, counter ring **Pos. 14**.
  Attention! There must be 2-3 mm of space between the shoulder on the counter ring **Pos. 14** and the pump head **Pos. 3.**, otherwise the packing cannot be adjusted later as necessary.

Step 4

- Place the springs **Pos. 16+20** and the seals **Pos. 15+21** in the spring housing **Pos. 19**.
- Push the dual piston **Pos. 22**, coupling end first, through the packing in the pump head **Pos. 3**, so that the coupling extends beyond the pump head slightly.
- Push the spring housing **Pos. 19,** with the material connection facing downwards, onto the dual piston **Pos. 22** on the pump head **Pos. 3**.
- Screw the retaining cap **Pos. 10** hand-tight onto the spring housing **Pos. 19**.

Step 3

- Push the complete pressure cylinder **Pos. 31** over the dual piston **Pos. 22** onto the spring housing **Pos. 19**. The male adapter **Pos. 39** is facing upwards. Hold the counter ring **Pos. 28** in place.
- Screw the retaining cap **Pos. 34** hand-tight onto the spring housing **Pos. 19**.

Step 2

- Span the material pump on the wrench flats of the pressure cylinder **Pos. 31** or male adapter **Pos. 39** tightly in a bench vise.
- Tighten both retaining caps **Pos. 10+34** very tightly with a hook spanner 110/115.

Step 1

- Place the O-Ring **Pos. (2)** in the pump head **Pos. 3**.
- Connect the motor axle of the air motor in the coupling on the dual piston **Pos. 22**.
- Using an open-end wrench SW 22, screw the four screws **Pos. (9)** together with the four washers **Pos. (8)** through the flange **Pos. 6** into the air motor. Tighten the screws in a cross-pattern tightly.
- Using an open-end wrench SW 27, screw the valve housing **Pos. (18)** together with the O-Ring **Pos. (17)** in the spring housing **Pos. 19**.
- Screw the draining screw **Pos. (4)** together with the O-Ring **Pos. (5)** in the pump head **Pos. 3**.

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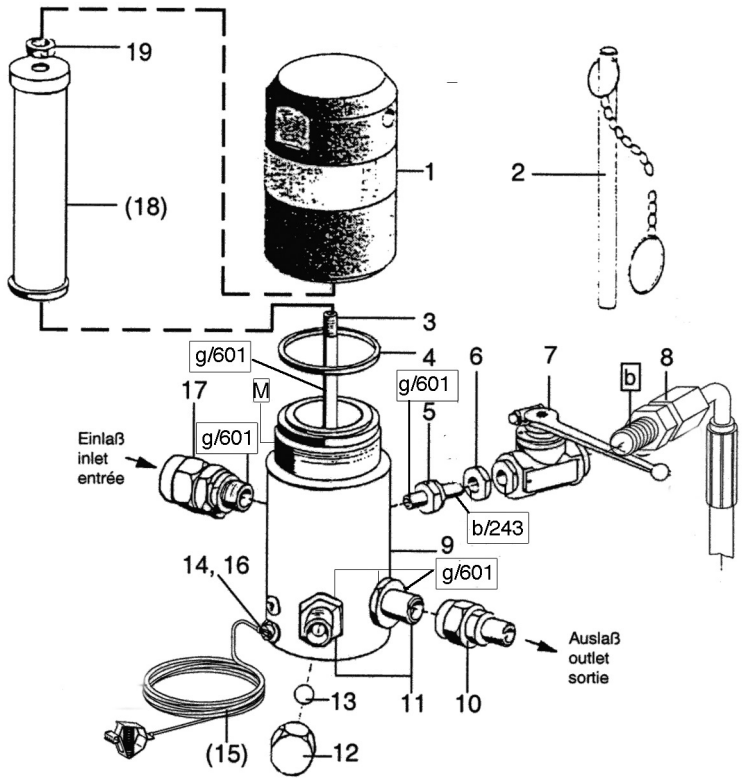
Hochdruckfilter • High pressure filter • Filtre haute pression — Typ 11 - N -

Bestell-Nr. • Order-No. • Référence: **0621773** Serie • Serie • Série: **001** Akt.: **13.06.07**



Filtereinsätze • filter inserts filtre • filtre seuls

Maschenweite mesh size maille	Bestell-Nr. Order-No. Référence	Werkstoff Material Matière première
M 30	0467782	Gewebe: Edelstahl Fassung: Kunststoff
M 50	0162787	
M 70	0162779	Screen wire: special steel Rim: plastik
M 100 (Standard)	0162760	
M 150	0162752	Fil toile métallique: acier special Support: Matière artificille
M 200	0162744	

WICHTIG! Vorschriftmäßige Erdung!
WARNING! Ground as prescribed!
ATTENTION! Mettez à la masse

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Pos. Pos. Code	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V^1 / D^2 / R^3	Artikelbezeichnung	Part Déscription	Désignation des articles
1.	0621765	1		Kappe	cap	capot
2.	0414719	1		Stiftschlüssel mit Kette	spanner with chain	clef avec chaîne
3.	0218367	1		Stehbolzen	threaded bolt	boulon
4.	0218375	1	V	O-Ring	o-ring	joint torique
5.	0218448	1		Reduziernippel	reducing nipple	raccord de reduction

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Hochdruckfilter • High pressure filter • Filtre haute pression — Typ 11 - N -

Bestell-Nr. • Order-No. • Référence: **0621773** Serie • Serie • Série: **001** Akt.: **13.06.07**

Pos. Pos. Code (Forts.)	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V^1 / D^2 / R^3	Artikelbezeichnung	Part Déscription	Désignation des articles
6.	0218286	1		Mutter	nut	écrou
7.	0646988	1		Kugelhahn, beinhaltet	ball valvei, includes	vanne, inclus
	0646990			Dichtungssatz für Kugelhahn	seal kit for ball valve	jeu de joints pour vanne
	0646991			Kugel für Kugelhahn	ball for ball valve	bille pour vanne
	0646989			Schaltgriff	handle grip	manette de changement
8.	0646729	1		Entlastungsschlauch	drain hose	flexible de décharge
9.	0621757	1		Gehäuse	housing	corps
10.	0161179	1		Anschlussnippel	connecting nipple	raccord double mâle
11.	0214396	1		Doppelnippel	male adaptor	raccord double mâle
12.	0216011	1		Hutmutter	dome nut	écrou à capuchon
13.	0410209	1		Kugel	ball	bille
14.	0460567	1		Schraube	screw	vis
(15.)	0474487	1		Erdungskabel	ground wire	câble de terre
16.	0460230	1		U-Scheibe	washer	rondelle
17.	0162728	1		Anschlussnippel	connecting nipple	raccord double mâle
(18.)		1	V	Filtereinsatz (siehe Tabelle)	filter insert (see table)	filtre seul (voir tableau)
19.	0485977	1		Mutter	nut	écrou
				ohne Abbildung	not illustrated	non illustré
	0620238	1		Verschlusskappe	closure cap	capot de fermeture

[1]V= Verschleißteile • Wear parts • Pièces d'usure usuelles
[2]D= Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints
[3]R= Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de reparation
[3]R_G = Teile des Reparatursatzes, groß • Parts of repair kit, big • Pièces de kit de reparation grand
[3]R_K = Teile des Reparatursatzes, klein • Parts of repair kit, small • Pièces de kit de reparation, petit

Sicherungsmittel / Thread sealant / produit d'etanchéite

Symbol / Symbol / Symbole	Beschreibung / Description / Description	Artikel / Bestell-Nr. Article / Order-No. L'article / Référenz
r	schwach / light / leger (50 ml)	222 / 0000016
b	mittel / medium / medium (50 ml)	243 / 0000015
schw	mittel, Kunststoff-Stahl / medium, plastic-steel / medium, plastique-acier (20 ml)	480 / 0000107
g	hochfest / high-streng / hautesistance (50 ml) hochfest für Cr/Ni-Teile / for Cr/Ni steel parts / pour partes fabriqué de Cr/Ni (50 ml)	601 / 0000014 2701 / 0000303
p	Rohrdichtungspaste / pipe sealant / pâte d'étanchéité pour tuyaux (50 ml)	225 / 0000017
a	Aktivator / activator / activateur (500 ml) Aktivator für Kunststoffteile / activator for plastic parts / activateur pour pièces de plastique (10 ml)	734 / 0000018 770 / 0000108
t	Gewindeband / threaded tape / ruban de filetage	/ 0000099

Schmiermittel / Lubrication grease / Matiére graisse

Symbol / Symbol / Symbole	Beschreibung / Description / Description	Bestell-Nr. Order-No. Référenz
F	Fett, säurefrei / acid-free / sans acide	0000025
S	Spülmittel / lubricating fluid / produit de nettoyage	0163333
M	Montagepaste (für R- und RS-Ausführung) / assembly paste (for version R or RS) / pâte d'assemblage (de version R et RS)	0000045

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Before beginning any repairs or maintenance on the unit, read all instructions found in the User's Handbook and observe them closely.

The User's Manual must be available at all times when working on the unit.

This chapter contains information on how to troubleshoot the high-pressure filter. The disassembly and reassembly are described step by step. In addition, you will find an exploded line drawing of the high-pressure filter, as well as the related spare parts lists at the conclusion of the troubleshooting section.
The appendix includes the spare parts list for either the Model 11 -N-, Model 11 -R- or the Model 11 -RS-.

Fault	Probable Cause	Solution
A) Pump does not work, although the spray gun is triggered (without tip) or the filter's drain valve is opened.	1. High-pressure filter is clogged.	1. Clean and/or replace the filter insert.
B) Material leaks out of the gap between the base housing and the cap.	1. O-ring is damaged.	1. Replace the o-ring.

PLEASE NOTE!
- **Clean the filter insert daily and whenever the coating material is changed. Replace the filter insert whenever necessary.**
- **Open the drain valve regularly to avoid it from becoming clogged.**
- **For R and RD version high-pressure filters: To avoid seizing, lightly grease the threads before assembly.**

WARNING!
- **Whenever work is to performed on the high-pressure filters, the airless pump (or system) must be completely shut down and remaining pressure drained from the highpressure filters (as described in the User's Handbook).**
- **Exchange any damaged parts for new ones.**
- **Before starting to work with the unit again, ensure that it has been grounded correctly.**

RA ……•e•01.03
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Exchanging the filter insert or o-ring

- Close the air tap lock on the airless pump.
- Drain remaining pressure by opening the filter ball valve **Pos. 7**.
- Use the included spanner **Pos. 2** to loosen the filter cap **Pos. 1** and remove it from the filter housing **Pos. 10**.
- Remove the o-ring **Pos. 4** from the housing **Pos. 10**.
- Using an open-end wrench (SW 13), remove the nut **Pos. 20** from the threaded bolt **Pos. 3**.
- Remove the filter insert **Pos. 19** from the threaded bolt **Pos. 3**.
- Clean the filter insert **Pos. 19** using the solvent or thinner recommended by the coatings material manufacturer.
- Assemble the parts in reverse order.

Replacing the high-pressure ball valve

- Remove the drain hose **Pos. 9** using an open-end wrench (SW 17).
- Loosen the nut **Pos. 6** with an open-end wrench. Do this while holding the reducing nipple **Pos. 5** in place.
- Loosen the ball valve **Pos. 7** using an open-end wrench (SW 17).
- Mount a new ball valve in the reverse order.

RA ……•e•01.03
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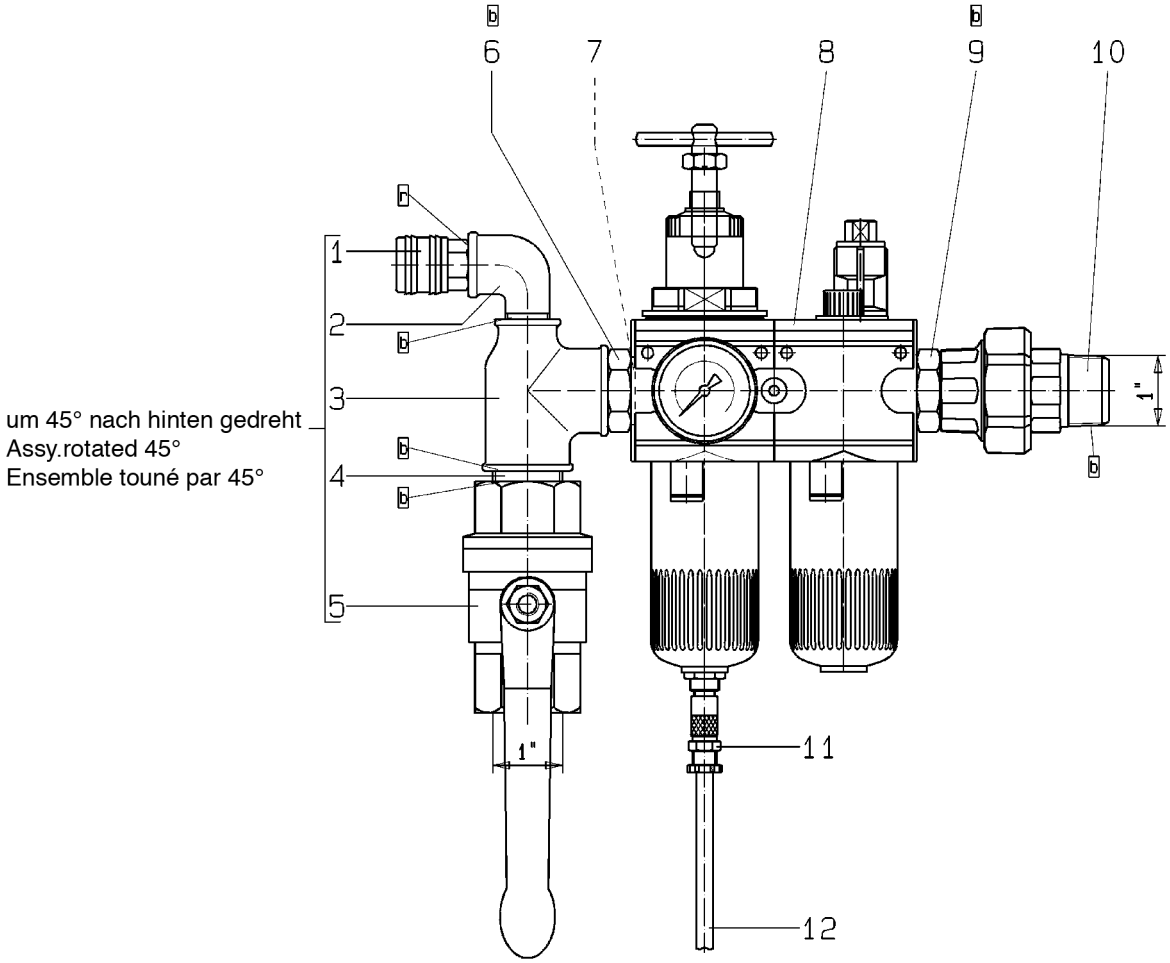
Wartungseinheit kpl. • Air Maintenance Unit cpl. • unité d'entretien cpl. — LM 200+233

Bestell-Nr. • Order-No. • Référence: **0648096** Serie • Serie • Série: **000** Akt.: **21.02.08**



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Pos. Pos. Code	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V^1 / D^2 / R^3	Artikelbezeichnung	Part Déscription	Désignation des articles
1.	0411965	1		Kupplung	coupling	accouplement
2.	0411949	1		Winkel	elbow	coude
3.	0621749	1		T-Stück	T-piece	pièce en T
4.	0621730	1		Langnippel	extension nipple	nipple longue
5.	0468622	1	V	Kugelhahn	ball valve	vanne
6.	0648094	1		Doppelnippel	male adaptor	raccord double mâle
7.	0649744	1		Dichtung	gasket	joint

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Wartungseinheit kpl. • Air Maintenance Unit cpl. • unité d'entretien cpl. LM 200+233

Bestell-Nr. • Order-No. • Référence: **0648096** Serie • Serie • Série: **000** Akt.: **21.02.08**

Pos. Pos. Code (Forts.)	Bestell-Nr. Order-No. Référence	Stück Pieces Pièce	V^1 / D^2 / R^3	Artikelbezeichnung	Part Déscription	Désignation des articles
8.	0647298	1	V	Wartungseinheit	air maintenance unit	unité d'entretien
9.	0648094	1		Doppelnippel	male adaptor	raccord double mâle
10.	0621722	1		Rohrverschraubung	pipe fitting	raccord vissé
11.	0648417	1		Verschraubung	screw fitting	vissage
12.	0643925	0,8m		Schlauch	hose	flexible

[1]V= Verschleißteile • Wear parts • Pièces d'usure usuelles
[2]D= Teile des Dichtungssatzes • Parts of seal kit • Pièces de kit de joints
[3]R= Teile des Reparatursatzes • Parts of repair kit • Pièces de kit de reparation
[3]R_G = Teile des Reparatursatzes, groß • Parts of repair kit, big • Pièces de kit de reparation grand
[3]R_K = Teile des Reparatursatzes, klein • Parts of repair kit, small • Pièces de kit de reparation, petit

Sicherungsmittel / Thread sealant / produit d'etanchéite

Symbol / Symbol / Symbole	Beschreibung / Description / Description	Artikel / Bestell-Nr. Article / Order-No. L'article / Référenz
r	schwach / light / leger (50 ml)	222 / 0000016
b	mittel / medium / medium (50 ml)	243 / 0000015
schw	mittel, Kunststoff-Stahl / medium, plastic-steel / medium, plastique-acier (20 ml)	480 / 0000107
g	hochfest / high-streng / hautesistance (50 ml) hochfest für Cr/Ni-Teile / for Cr/Ni steel parts / pour partes fabriqué de Cr/Ni (50 ml)	601 / 0000014 2701 / 0000303
p	Rohrdichtungspaste / pipe sealant / pâte d'étanchéité pour tuyaux (50 ml)	225 / 0000017
a	Aktivator / activator / activateur (500 ml) Aktivator für Kunststoffteile / activator for plastic parts / activateur pour pièces de plastique (10 ml)	734 / 0000018 770 / 0000108
t	Gewindeband / threaded tape / ruban de filetage	/ 0000099

Betriebsmittel / Machinery materials / Équipement de production

Symbol / Symbol / Symbole	Beschreibung / Description / Description	Bestell-Nr. Order-No. Référenz
F	Fett, säurefrei / acid-free / sans acide	0000025
T	Trennmittel / release agent / agent séparateur bei Verarbeitung von Isozyanat / for application with isozyanate / pour l'application de l'isozyanate	0163333 0640651
M	Montagepaste (für R- und RS-Ausführung) / assembly paste (for version R or RS) / pâte d'assemblage (de version R et RS)	0000045

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